

Charles E. Shaw

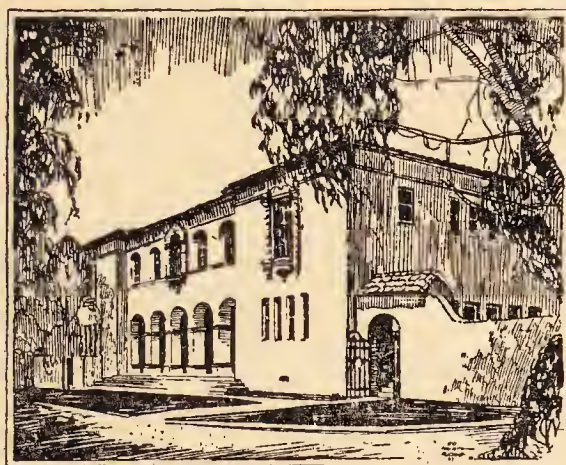
BULLETINS
OF THE
Zoological Society of San Diego

No. 25

**The Lizards of San Diego County
with Descriptions and Key**

By **CHARLES E. SHAW**

Herpetologist, Zoological Society of San Diego



SAN DIEGO, CALIFORNIA

October 14, 1950



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DESCRIPTIONS AND KEY

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INTRODUCTION

The lizards are the most conspicuous and probably the most numerous members of San Diego County's reptile population. Because of this, it is natural that many campers, hikers and others whose activities may take them afield, become aware of at least a few of the 30 species and sub-species that compose our local lizard fauna. Frequently the lizard encountered is new to the observer's experience and arouses some curiosity about its identity or some aspect of its behavior. It is for those who desire a non-technical means of identification as well as information concerning the habits of our lizards that this pamphlet is intended.

In the following pages particular attention has been given to the inclusion of the type of information generally sought by laymen whose desire for information about lizards results in a great many telephone calls to the Zoo each year. Many of the telephone queries serve to emphasize the fact that those lacking any real knowledge or understanding of lizards burden them with a great many scientifically unfounded and illogical attributes. Such stories as those concerning the reputedly venomous blood "spit" by horned toads; the glass snake (in reality a legless lizard with a long fragile tail) re-assembling its sundered parts; the poisonous claws of geckos; and the wholly erroneous but widely held conception of the source of the Gila Monster's venom, to mention a few, are unfortunately still perpetuated in the hearsay natural history of the lizards.

Although a great deal of information concerning San Diego County lizards has been published, most of this has appeared over the years in many scattered scientific publications that are not readily available to the layman. Furthermore, for those whose interest in lizards is only occasional or casual, such sources are undesirable and difficult because they are replete with unfamiliar technical terms.

For those having an interest exceeding the scope and treatment given here, there is appended a list of more comprehensive and detailed references on page 57.

All but one of the illustrations accompanying the descriptions of the local lizards were made from photographs resulting from many hours of patient and untiring effort, usually with unwilling subjects, by G. E. Kirkpatrick. Mr. Joseph R. Slevin of the California Academy of Sciences has very generously loaned the photograph of the Red-tailed Skink.

I am indebted to my wife for the line drawings in the key.

My thanks are especially due L. M. Klauber and C. B. Perkins for their advice and constructive criticism of the manuscript.

GENERAL INFORMATION

Differences between snakes and lizards.

To some readers this heading may appear to introduce an unnecessary discussion, for the simple but superficial criterion of the presence or absence of legs is considered by many to be the fundamental means of distinguishing between lizards and snakes. That the possession of legs is not a constant characteristic of all lizards is well demonstrated in our own county by the California Legless Lizard (*Anniella pulchra pulchra*). When brought to the Zoo, specimens of this lizard are invariably thought to be snakes by those unfamiliar with such unusual creatures as these. Throughout the world many kinds of lizards are undergoing or have undergone a similar evolution involving a partial or complete loss of the fore or hind legs or both. Correlated with such leg reduction or loss there is also an elongation of the body in these species, causing them to become even more confusingly snake-like in appearance.

One may naturally ask then, just what features will satisfactorily separate the lizards from the snakes? The answer to this question is to be found only in the internal anatomy of the animals concerned. For the purpose of the present paper these are not satisfactory, since the intention here is to present a means of identification without recourse to internal anatomy, or an unfamiliar terminology.* However, there are combinations of external features by which the San Diego County lizards may be told from the snakes. Of course, as with most rules, there are exceptions and among

*For those interested in these internal distinctions between the lizards and the snakes some of the more trenchant characters are listed:

LIZARDS

1. The two halves of the lower jaw united in front (chin) by an immovable suturing of the bones.
2. Anterior end of the brain case open.

SNAKES

1. The two halves of the lower jaw united in front (chin) by an elastic ligament.
2. Anterior end of brain case closed.

our local lizards there are several that lack one or more of the superficial distinguishing characters discussed below.

Most lizards have movable eyelids while no snake has them. In San Diego County there are three lizards that lack eyelids, the Tubercular Gecko, the Yucca Night Lizard, and the Granite Night Lizard. In such lizards as these the eye is protected, as in snakes, by a thin transparent scale or spectacle. The distinction from snakes of the above named lizards lacking eyelids is a simple matter for all have well developed legs.

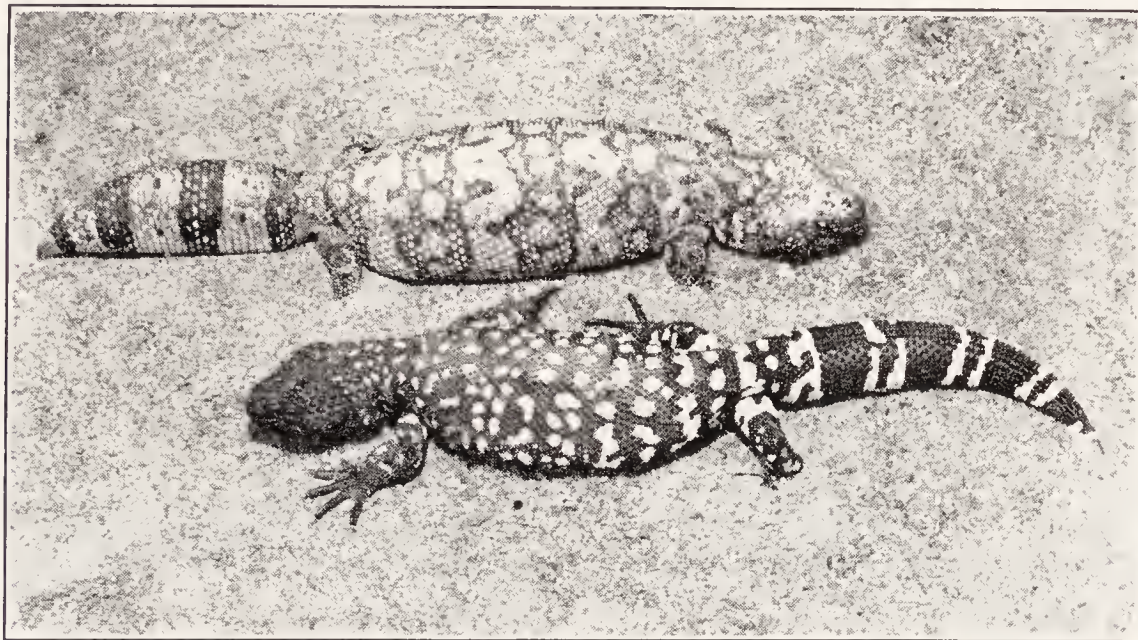
As previously noted, there is in our own backyard, so to speak, an elongate little lizard known as the California Legless Lizard, which completely lacks any external indications of legs and consequently is quite snake-like in appearance. When a specimen of this lizard is closely examined, however, it will be seen to have lidded eyes, a feature at once separating it from the snakes.

Most lizards have a conspicuous ear opening and ear drum or tympanum, thus differing from the snakes that lack any external evidence of ears and, therefore, cannot hear in the sense of being able to receive sound vibrations transmitted through the air. Again, there are exceptions among our local lizards. Two, the California Legless Lizard and the Flat-tailed Horned Toad always lack an ear opening; the Desert Horned Toad may sometimes have the opening covered with small scales or a single large scale, while other specimens of the same species have an exposed tympanum or ear drum.

Poisonous Lizards.

Within the boundaries of San Diego County, or the State of California for that matter, there are NO poisonous lizards. In fact, there are only two lizard species in the world that are definitely known to be venomous. These are the Gila Monster (pronounced hee-la) and the closely related Mexican Beaded Lizard. The Gila Monster is the only one of these two lizards found in the United States, being distributed through our southwestern deserts from southern

Nevada and southwestern Utah, southward through Arizona and extreme southwestern New Mexico. Its natural range does not include any other area of this country. The Mexican Beaded Lizard, as its name indicates, is solely Mexican in distribution, ranging along the west coast from southern Sonora south to the Isthmus of Tehuantepec.



Gila Monster (upper) and Mexican Beaded Lizard (lower)

The Gila Monster is the heaviest bodied American lizard, and has a very distinct pattern of irregular black bands across the back, these overlying the pinkish or orange ground color of the animal. There are usually circular spots or lines of the lighter ground color in these bands. Its very distinctive scalation of small bead-like scales on the top and sides of the head, body, tail and limbs will serve to distinguish it from all other American lizards. Each of these raised, rounded protuberances is actually a small particle of bone embedded in the skin. The average large specimen of this species will reach a length of about 16 to 18 inches.

The poison apparatus of the Gila Monster consists of venom glands, venom ducts and grooved teeth. There is a pair of venom glands, one located on either side of the lower jaw, from which several venom ducts open into the mouth

between the lips and the teeth, but do not directly connect with the teeth. All of the teeth in the mouth of a Gila Monster are grooved, the grooves providing the channels for venom conduction. The poison mechanism of the Gila Monster is not so well specialized as that of the rattlesnake, for the Gila Monster, in order to make effective use of its venom, must seize its victim and hang on for some time while the venom seeps from the venom ducts into the wounds provided by the grooved teeth. In spite of its evil reputation there are very few authenticated cases of death resulting from the bite of the Gila Monster.

As we have discovered from answering many telephone queries at the Zoo, there is a tendency for most people to label almost any of our local lizards "Gila Monster," particularly if the lizard is gaudily colored or an animal entirely new to the experience of the questioner. At risk of being repetitive, it is felt worth while to state again that the Gila Monster *does not* occur in California.

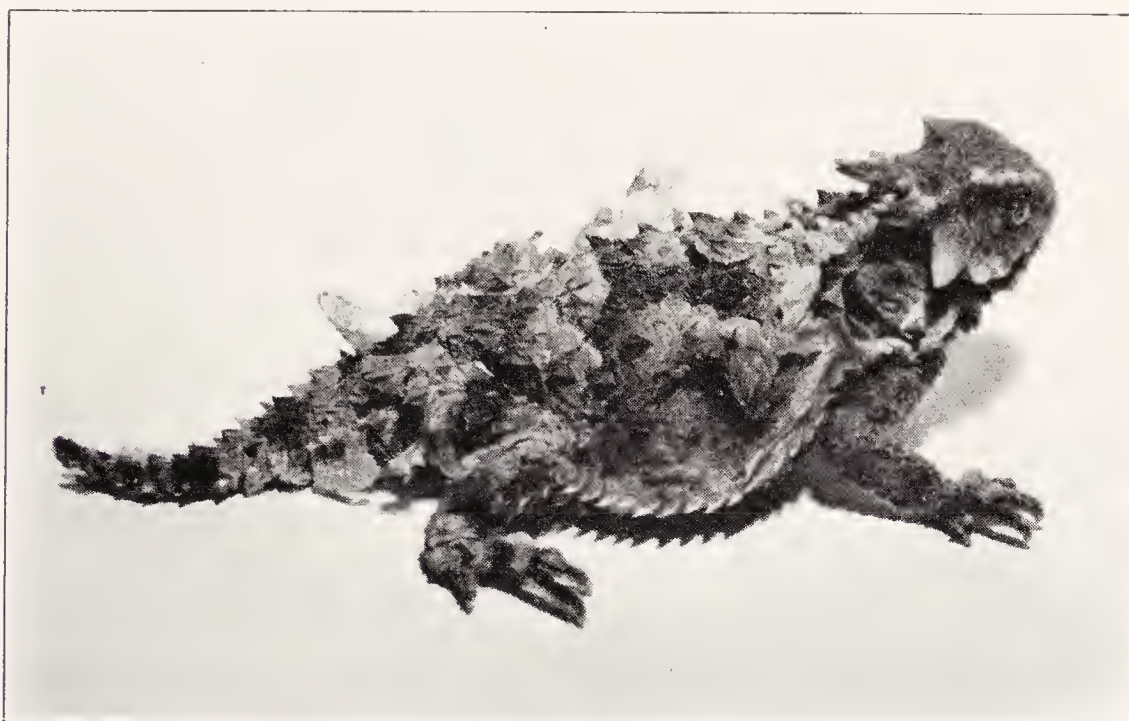
Shedding of the skin.

Lizards, like snakes, shed their skins at intervals, the old outer layer of skin sloughing off to leave a new one of greater beauty beneath. Unlike a snake, which normally sheds its skin in one piece, most lizards shed their skins in fragments. Our local Alligator lizard, however, frequently sheds its skin entire.

Some lizards, such as geckos, shed their skins more frequently than other kinds. Geckos may aid the shedding process by tearing at the loosened skin with their teeth and eating the pieces they manage to pull off.

In coarse-scaled lizards such as Chuckwallas and the Spiny and Fence lizards, the shedding process may occupy a considerable period of time, for the roughness of scalation seems to be a definite hindrance to quick shedding. Chuckwallas, for example, may require from one to two months to rid themselves completely of the old skin, which peels away in relatively small patches or flakes.

To facilitate shedding of the skin over the head, the lizards make use of a complicated mechanism by which they are able to raise the blood pressure in the head, this causing the softer head parts to swell and the eyes to bulge conspicuously. By stretching the old skin and cracking it away from the new skin beneath, this action hastens the shedding, particularly on the eyelids, where loosely dangling and persistent pieces of old skin might interfere with normal vision.



A Southern California Horned Toad shedding its skin.

Reproductive habits.

Surprisingly little is known concerning the reproductive habits of most lizards. Mating takes place during the spring months, but the commencement of reproductive activity is probably not simultaneous throughout the county, due to local geographical differences in the onset of warm spring weather. The advent of warmer weather naturally varies somewhat in the three principal areas into which the county may be conveniently divided, namely: coastal, mountain, and desert.

With but three exceptions, our local lizards lay eggs that may range in number from one or two per clutch to up-

wards of two dozen, depending, of course, upon the species. In those of our local species whose eggs have been seen, the eggs are variable in size, ranging from about a third of an inch in length in the smaller species to about an inch and one-half in our largest lizard, the Chuckwalla. The eggs are immaculate and are either whitish or light-yellowish in color with a somewhat leathery, pliant shell.

The eggs are laid in moist, but not wet locations in which a favorable temperature will insure proper incubation. Incubation periods probably vary with different species as well as with the local conditions where the eggs are deposited. Under artificial conditions in captivity the eggs of several of our local species have been found to require about 50 to 80 days of incubation before hatching. During incubation the soft-shelled eggs actually increase in size due to the absorption of moisture and the growth of the embryo. The growth is most noticeable in the egg width which may increase as much as 50% or a little more, over the width when first laid. The eggs may also increase slightly in length, but not so conspicuously as in width.



Eggs and young of the Southern California Horned Toad.
The spotting on the eggs is due to adhering particles of sand and peat moss.

Instead of laying eggs, three of our San Diego County lizards give birth to their young. These species are the Yucca Night Lizard, the Granite Night Lizard and the California Legless Lizard. The young of these species are born in the late summer or early fall and, like the offspring of the egg-laying lizards, are perfectly capable of making their own way from the time they put in their first appearance as fully developed miniatures of their parents.

Although the females of some lizards are known to guard their incubating eggs, this behavior has not been observed in any of our local species. As a matter of fact, the concern of most egg-laying lizards for the welfare of their potential progeny goes no further than the selection of a suitable laying site and the deposition of the eggs. There is no parental care of the young after they are hatched or born.

Tail regeneration.

When seized by, or sometimes only lightly touched upon the tail, nearly all of the lizards found in San Diego County are capable of dropping or breaking off more or less of the tail and then growing a new one. The actual dropping of the tail is protective in nature since any lizard with this ability may thwart his would-be captor by simply leaving a portion of this member behind while dashing swiftly away to safety. Tails so dropped usually writhe violently for several moments and give the appearance of being quite alive, thus providing an active and interesting distraction for the lizard's pursuer for a time sufficient for the lizard's safe retreat. The break in the tail takes place not between individual vertebrae, but actually at a prescribed "weak spot" at the middle of any of the tail vertebrae.

Within a short time after the lizard has lost a portion of its tail, the wound heals and subsequently a small conical tip appears at the stub. In most species this tip of new growth eventually elongates and restores the original tapering appearance of the tail. A regenerated tail, however, differs in three respects from the original. First, the new tail never reaches so great a length as the tail with which the lizard

was originally equipped. Next, the scalation on the regrown portion of the tail is irregular and noticeably different in appearance from the original tail scalation that can usually be seen, at least near the base of the tail, and compared with the scalation of the regrown portion. The last and most fundamental difference is that the new tail is supported by a cartilaginous rod-like extension from the vertebrae in the remaining portion of the original tail, the vertebrae not being regrown.

Frequently lizards are found in which the tail is forked. Such an odd-appearing tail results from an incomplete fracture causing a secondary tail "shoot" to grow from the main tail.



A Desert Banded Gecko with a forked tail.

Pattern and color change.

In most of our local lizards the young are more distinctly and brightly colored than the adults, and in some the young are markedly different from the adults in pattern and color. Because of such variation the key to the local lizards may not always correctly identify a juvenile specimen. It is suggested that, should difficulties of this sort arise, reference be made to the illustrations and descriptions of the various species.

Among the local lizards in which the age variation in pattern and color is more pronounced are the Western and Red-tailed Skinks, the Alligator Lizard, and the Chuckwalla. The young of these have a pattern and/or coloration so unlike that of the adult that they might readily be considered as entirely different lizards by those unacquainted with such variability.

Another type of color change results from responses to differing conditions of temperature or light, and in some instances, emotions. Color changes due to these influences occur in most of our local lizards. Responses to these influences result in a paling or a darkening of the general coloration of the lizard. In most cases high temperatures elicit a pale coloration while moderate temperatures cause darkening. At moderate temperatures some of our lizards become pale in darkness and dark under illumination. Color changes as a result of these influences also include, to a greater or less degree, some change in the appearance of the pattern as well.

A third type of color change occurs during the nuptial or breeding season of a few of our local lizards. In this regard the most notable example is the female Leopard Lizard which assumes a most striking breeding coloration. More or less of the entire undersurface of the body and tail becomes a beautiful crimson color, and there are several vertical bars or blotches of the same color along either side of the body.

The males of two of our lizards, the Western Skink and the Red-tailed Skink also acquire a more brilliant coloration during the breeding season. In the Red-tailed Skink an already reddish head becomes more brilliantly colored; in the Western Skink the reddish or orange lips become more intense in color at this time.

In addition to seasonal or age variation in color there also occur localized or geographical differences in the general coloration of a single species. Such variations as these apparently function in a protective manner, affording the lizard some measure of concealment by blending or matching it with the color of the background upon which it dwells. The most notable local examples of this type of locally variable

coloration occur in the Horned Toads, particularly the Southern California Horned Toad and the Desert Horned Toad. The background-color-matching of these lizards is not known to be subject to change during the life of the animal beyond the customary paling or darkening due to temperature or light influences mentioned above.

Male coloration and fighting.

Perhaps most, if not all, of the males of our local lizards will fight among themselves particularly during the breeding season. The males demonstrate a marked defensive attitude toward a certain area or territory such as a particular stump or clump of rocks that they regard as exclusively their own and in which they will not normally tolerate other adult males. Correlated with fighting behavior, some of our lizards, such as the Fence Lizard and the Spiny Lizards, have developed brightly colored belly and throat patches of greenish or blue. The purpose of these bright colors is not to lure females during the breeding season but rather to intimidate or frighten away other males that may be inclined to trespass upon another individual's territory. Intimidating displays are an interesting performance in the case of the above mentioned species, the lizard greatly flattening its body in a vertical plane, thereby prominently displaying the bright color patches on the lower surface of the body while at the same time erecting a throat fan or dewlap. The lizard makes himself appear even more menacing by standing with the legs nearly vertically straightened, with back arched, and advancing broadside towards his adversary. Such displays usually serve to drive off an intruder without recourse to actual combat. Males of species lacking such intimidating coloration more often must actually fight in order to be recognized as males by other males of their own species.

Frequently lizards will be observed nodding the head or performing a rapid series of "push ups" or raising and lowering of the head and body. Such action is known as bobbing and has no known significance other than as an indication of nervous alertness of the lizard.

Food.

The food of the majority of our lizards consists entirely of insects and other arthropods. A few species such as the Chuckwalla and the Desert Iguana feed upon the blossoms and leaves of desert plants. The Fringe-toed Sand Lizard and the Gridiron-tailed Lizard live upon a mixed diet of plant matter and insects, although the Sand Lizard apparently is the more regularly omnivorous of the two. A few of our lizards such as the Leopard Lizard, Collared Lizard, and Alligator Lizard do not hesitate to vary their primarily insectivorous diet with an occasional lizard.

The economic value of the food habits of the majority of our lizards is undisputed, for they contribute not a little to the control of noxious insect pests. The beneficial food habits of the San Diegan Alligator Lizard, the most abundant lizard about residential areas of the city, are unappreciated by the majority of persons, who, at first sight of one of the harmless creatures, automatically condemn it only because of its rather sinister appearance. In reality the Alligator Lizard is a most valuable garden asset for it includes in its diet the egg cases of the deadly Black Widow spider as well as the spider itself.

A LIST OF THE LIZARDS OF SAN DIEGO
COUNTY, CALIFORNIA

FAMILY Gekkonidae

Tubercular Gecko (*Phyllodactylus tuberculosus tuberculosus*)

Desert Banded Gecko (*Coleonyx variegatus variegatus*)

San Diegan Banded Gecko (*Coleonyx variegatus abbotti*)

FAMILY Iguanidae

Desert Iguana (*Dipsosaurus dorsalis dorsalis*)

Western Collared Lizard (*Crotaphytus collaris baileyi*)

Leopard Lizard (*Crotaphytus wislizenii*)

Great Basin Chuckwalla (*Sauromalus obesus obesus*)

Colorado Desert Fringe-toed Sand Lizard (*Uma notata notata*)

Southern California Gridiron-tailed Lizard (*Callisaurus draconoides gabbii*)

Banded Rock Lizard (*Streptosaurus mearnsi*)

Long-tailed Bush Lizard (*Urosaurus graciosus*)

Somber Rock Lizard (*Urosaurus microscutatus*)

Southern California Side-blotch Lizard (*Uta stansburiana hesperis*)

Desert Side-blotch Lizard (*Uta stansburiana stejnegeri*)

Western Fence Lizard (*Sceloporus occidentalis biserialatus*)

Southern Mountain Swift (*Sceloporus graciosus vandenburgianus*)

Desert Spiny Lizard (*Sceloporus magister magister*)

Granite Spiny Lizard (*Sceloporus orcutti orcutti*)

Southern California Horned Toad (*Phrynosoma coronatum blainvillii*)

Desert Horned Toad (*Phrynosoma platyrhinos platyrhinos*)

Flat-tailed Horned Toad (*Phrynosoma m'callii*)

FAMILY Anguidae

San Diegan Alligator Lizard (*Elgaria multicarinata webbii*)

FAMILY Anniellidae

California Legless Lizard (*Anniella pulchra pulchra*)

FAMILY Xantusiidae

Granite Night Lizard (*Xantusia benshawii*)

Yucca Night Lizard (*Xantusia vigilis*)

FAMILY Teiidae

California Orange-throated Lizard (*Cnemidophorus hyperythrus beldingi*)

Desert Whiptail Lizard (*Cnemidophorus tigris tigris*)

Coastal Whiptail Lizard (*Cnemidophorus tigris multiscutatus*)

FAMILY Scincidae

Western Skink (*Eumeces skiltonianus*)

Red-tailed Skink (*Eumeces gilberti rubricaudatus*)

KEY TO THE LIZARDS OF SAN DIEGO COUNTY

Start with No. 1, which gives two choices; take the correct "if" of the two alternatives and proceed to the paragraph starting with the number appearing at the right; continue in the same manner until the name of the lizard is given.

The key must be started at the beginning and not at some other place where a phrase happens to fit the lizard in hand.

The key is not infallible, and it can be used only for lizards captured in San Diego County. Among individual lizards of the same species there is a great deal of variation in color and markings; also in some species the young and adults are noticeably different in pattern and color. Because of such variation an error in identification might occasionally occur. But it is believed that, should this happen, the lizard can be identified by using the key as far as possible, and then referring to the illustrations and descriptions of the lizards.

1. If there are legs 2
 If there are no legs—California Legless Lizard
 (*Anniella pulchra pulchra*) Page 49
2. If there are no eyelids 3
 If there are eyelids 5
3. If there are small pads at the tips of the toes—
 Tubercular Gecko (*Phyllodactylus tuberculosus*
 tuberculosus) Page 27
 If the tips of the toes are without pads..... 4
4. If the body and the tail are nearly cylindrical and
 the back is peppered with small dark-brown or
 black spots — Yucca Night Lizard (*Xantusia*
 vigilis) Page 51
 If the head and body are very flat and the back is
 patterned with black blotches separated by a net-
 work of light interspaces—Granite Night Lizard
 (*Xantusia henshawi*) Page 50

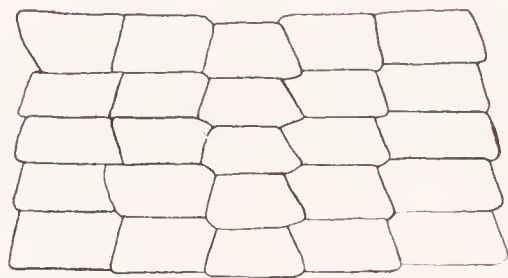
5. If there are prominent spines or horns on the back and sides of the head 6



Head spines and horns

- If the back and sides of the head are without spines or horns 8
6. If there is a narrow dark line down the center of the back—Flat-tailed Horned Toad (*Phrynosoma m'callii*) Page 47
- If there is no dark line down the center of the back 7
7. If there is a single row of fringe spines along the side of the body at the edge of the belly—Desert Horned Toad (*Phrynosoma platyrhinos platyrhinos*) Page 46
- If there are two rows of fringe spines along the side of the body at the edge of the belly—Southern California Horned Toad (*Phrynosoma coronatum blainvillii*) Page 45
8. If there is a row of enlarged scales forming a low crest down the center of the back and onto the tail—Desert Iguana (*Dipsosaurus dorsalis dorsalis*) Page 30
- If there is no such crest 9
9. If the underside of the tail is white marked with cross bands or nearly round blotches of black 10
- If not 11

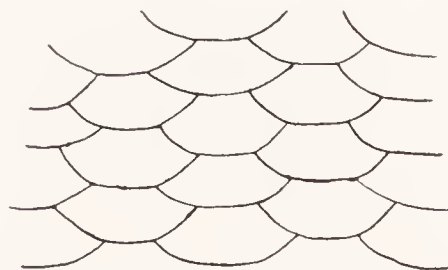
10. If the latter half of the tail is completely encircled by black bands—Southern California Gridiron-tailed Lizard (*Callisaurus draconoides gabpii*) Page 35
If the underside of the latter half of the tail is marked with black cross bands that do not completely encircle the tail—Colorado Desert Fringe-toed Sand Lizard (*Uma notata notata*) Page 34
11. If the belly is covered with rectangular, plate-like scales 12



Rectangular, plate-like belly scales

- If the belly scales are not rectangular, and plate-like 15
12. If there are 8 rows of plates across the belly and the scalation on the back is granular in appearance 13
If there are 12 rows of plates across the belly and the scales on the back are large and provided with a central ridge or keel—San Diegan Alligator Lizard (*Elgaria multicarinata webbia*)Page 48
13. If the body is longitudinally striped, the two light stripes on the side of the body extending from the eye rearward along the sides of the body and the dark color between the stripes is not broken into spots or vertical bars—California Orange-throated Lizard (*Cnemidophorus hyperythrus beldingi*) Page 52

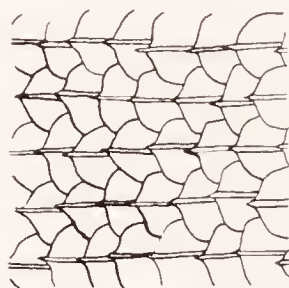
- If the body is more or less conspicuously striped, and the stripes originate on the back of the head, not touching the eye, and the dark color between them is spotted with yellow or gray, arranged into vertical bars, or broken into spots or squares..... 14
14. If the lizard was found on the desert or in the desert foothills—Desert Whiptail Lizard (*Cnemidophorus tigris tigris*)Page 53
- If the lizard was found in the region extending from the eastern slopes of the mountains west to the coast—Coastal Whiptail Lizard (*Cnemidophorus tigris multiscutatus*)Page 54
15. If the scales on the top and sides of the body have rounded overlapping rear edges and are smooth and glossy in appearance 16



Smooth, rounded scales

- If the scalation is not as described above 20
16. If the tail is bright blue or has a faint bluish tip
—Western Skink (*Eumeces skiltonianus*) ..Page 55
- If the tail shows no trace of blue or bluish-gray..... 17
17. If the tail is pink—Red-tailed Skink (*Eumeces gilberti rubricaudatus*) Page 56
- If the tail is yellowish-brown or brown..... 18
18. If the top and sides of the body are unicolor reddish-brown or bronze—Red-tailed Skink (*Eumeces gilberti rubricaudatus*)Page 56
- If the top and sides of the body show some indications of light stripes 19

19. If the scales in the light area on the top of the back between the two uppermost light stripes do not have dark color pigment on their rear edges—Western Skink (*Eumeces skiltonianus*)Page 55
- If the scales in the light area down the center of the back between the uppermost stripes have darkened rear edges giving the effect of narrow crossbars—Red-tailed Skink (*Eumeces gilberti rubricaudatus*)Page 56
20. If the scales on both the top and sides of the body are provided with a central ridge or keel, are strongly overlapping, and have a projecting rear point 21

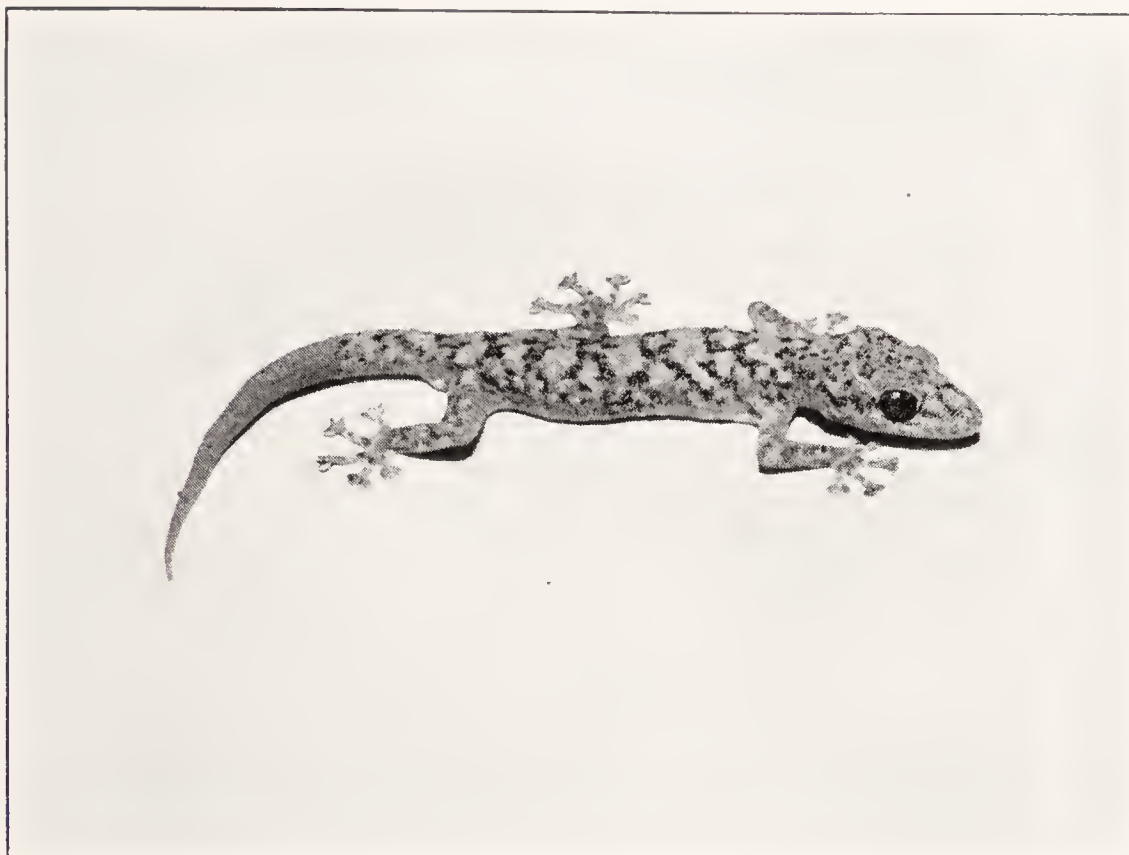


Overlapping, keeled scales

- If the scales on the top and sides of the body are not as described above 24
21. If there are several dark bars radiating from the lower border of the eye—Granite Spiny Lizard (*Sceloporus orcutti orcutti*)Page 44
- If there are no such markings 22
22. If there are no dark cross bands on the front legs—Desert Spiny Lizard (*Sceloporus magister magister*)Page 43
- If there are dark cross bands on the front legs..... 23
23. If the back of the thigh is yellow—Western Fence Lizard (*Sceloporus occidentalis biseriatus*)Page 41

- If the back of the thigh is light-gray—Southern Mountain Swift (*Sceloporus graciosus vandenburgianus*)Page 42
24. If the underside of the head is coarsely striped or bears a network of dark-gray lines or if the sides of the lower jaw are coarsely spotted 25
 If the underside of the head is not as described above 27
25. If the underside of the head is longitudinally striped with several dark-gray or black stripes on a light-gray or white background—Leopard Lizard (*Crotaphytus wislizenii*)Page 32
 If the underside of the head bears a network of dark-gray lines or if the sides of the lower jaw are coarsely spotted 26
26. If the head and body are flattened and the tail is banded with dark cross bars—Banded Rock Lizard (*Streptosaurus mearnsi*)Page 36
 If the head and body are not flattened and the tail is spotted with brown and white—Western Collared Lizard (*Crotaphytus collaris baileyi*)Page 31
27. If there is a conspicuous spot of black or bluish-black on the side of the body just behind the front leg 28
 If there is no such spot 29
28. If the lizard was found on the desert or in the desert foothills—Desert Side-blotch Lizard (*Uta stansburiana stejnegeri*)Page 40
 If the lizard was found in the region extending from the eastern slopes of the mountains westward to the coast—Southern California Side-blotch Lizard (*Uta stansburiana hesperis*)Page 39

29. If there are dark cross bands on the front legs.... 30
 If the front legs are immaculate, or spotted
 rather than cross banded 31
30. If the general coloration is light- to dark-gray
 and there is a band of 5 or 6 rows of enlarged
 scales down the center of the back, these con-
 spicuously larger than the bordering scales on
 either side—Long-tailed Bush Lizard (*Urosaurus*
graciosus) Page 37
 If the general coloration is blackish and the
 scales on the back are all small, those down the
 center of the back only slightly larger than those
 on either side of the body—Somber Rock Lizard
 (*Urosaurus microscutatus*)Page 38
31. If the eyelids are edged with enlarged, pointed,
 yellowish-white “eyelash-like” scales 32
 If the scales edging the eyelids are not prominent
 and not yellowish-white—Great Basin Chuck-
 walla (*Sauromalus obesus obesus*)Page 33
32. If the lizard was found on the desert or in the
 desert foothills—Desert Banded Gecko (*Cole-
 onyx variegatus variegatus*)Page 28
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 the mountains—San Diegan Banded Gecko
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TUBERCULAR GECKO

Phyllodactylus tuberculosus tuberculosus

This little nocturnal, rock-dwelling lizard derives the first word of its scientific name from the leaf-like pads on the tips of the toes, *Phyllodactylus* literally meaning "leaf toes." These peculiar structures enable these lizards to cling to extremely smooth and precipitous rock surfaces and even to walk upside down on a horizontal surface. It receives the common name Tubercular Gecko from the presence of several irregular rows of enlarged scales or tubercles on the back. The color is gray with a half-dozen or so uneven brown cross bands across the back, these sometimes broken into small brown blotches. It has no eyelids. This lizard barely enters the United States from Baja California, ranging only a short distance north of the border where it is found in San Diego, Imperial and Riverside counties, California. In San Diego County it occurs only in the rocky foothills that fringe the western edge of the Colorado Desert. These lizards have been taken at such localities as Borrego Palm Canyon, The Narrows, and Agua Caliente Hot Spring by prying rock flakes from boulders during the daytime. Ordinarily they are nowhere abundant, but as many as 12 have been taken under a single rock flake. Not only should the parent boulder be examined for specimens but also the underside of the flake as well, for quite often the gecko rests upon this surface. They are usually fairly easy to capture, the bright daylight temporarily blinding them when their rock covering is removed. They must be caught gently, however, as their skin is delicate and will tear rather easily if the lizard is handled too roughly. At night in the rocky foothills between Scissors Crossing and The Narrows they occasionally may be seen with the aid of car headlights abroad on the road. Adults are about 5 inches in length.



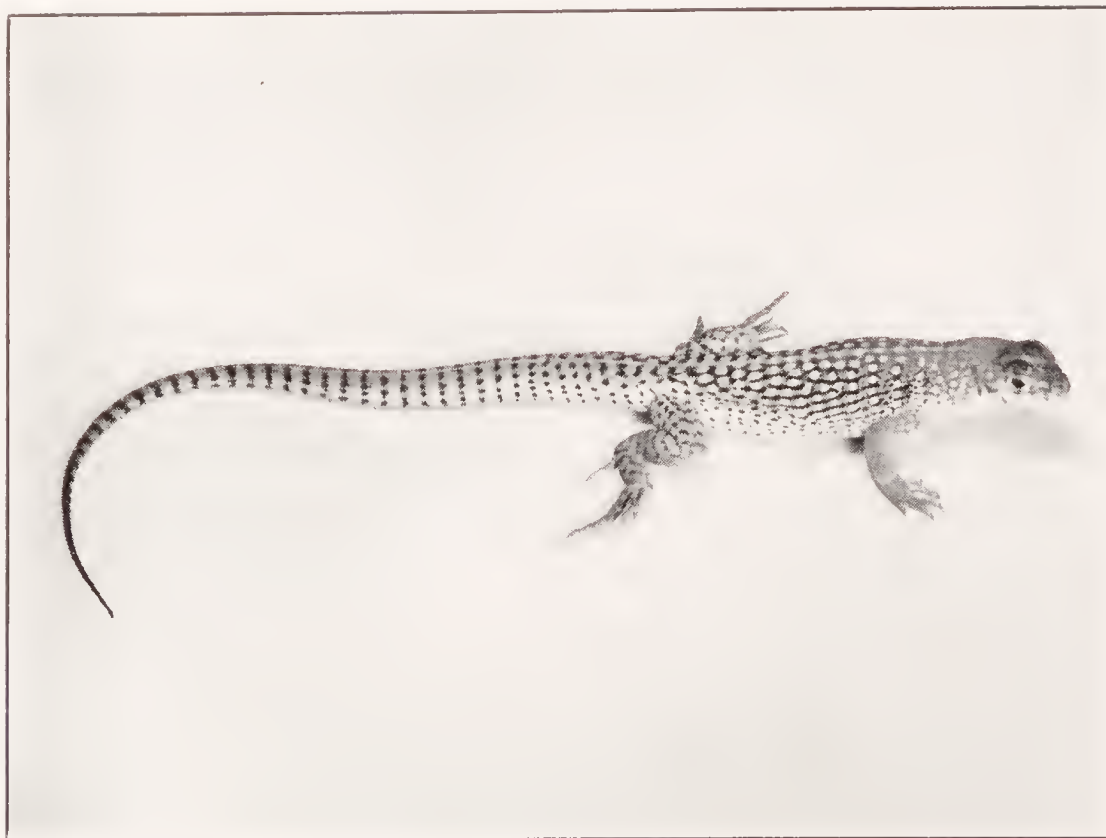
DESERT BANDED GECKO
Coleonyx variegatus variegatus

In San Diego County the Desert Banded Gecko is found only in the desert and desert foothills. Because of the nocturnal habits of this lizard, specimens will normally be concealed during the day in or under a variety of objects such as dead and rotting agave stumps, small rocks, fallen yucca branches, rock flakes on large boulders, etc. Occasionally they may be found by digging in rodent holes in sandy areas on the desert. In the spring and summer months the Desert Banded Gecko comes out of its daylight retreat to forage for food at night. During the months of May and June, the peak of their season of activity, they are most commonly encountered abroad between the hours of 7 and 10 p.m. The adult of this lizard is pale-yellowish or light-gray in color, the top of the head being spotted with red-brown and the back spotted or banded with red-brown. Very young specimens may have a more or less obvious light line reaching from eye to eye around the back of the head. This marking is generally absent in the adults. In captivity these lizards will eat termites, flies, small roaches, mealworms, etc. They have also been observed to eat parts or all of their skin when shedding. In their native habitat these lizards are preyed upon by nocturnal snakes. The Desert Leaf-nosed snake has been known to tear off and eat the tails of geckos of a size too great to allow the snake to swallow the entire lizard. The Leaf-nosed snake also finds the small, soft-shelled eggs of the gecko a desirable item on its menu. Adults are about 6 inches in length. When annoyed or touched these little lizards usually will give voice to a faint high-pitched squeak or squeal.



SAN DIEGAN BANDED GECKO
Coleonyx variegatus abbotti

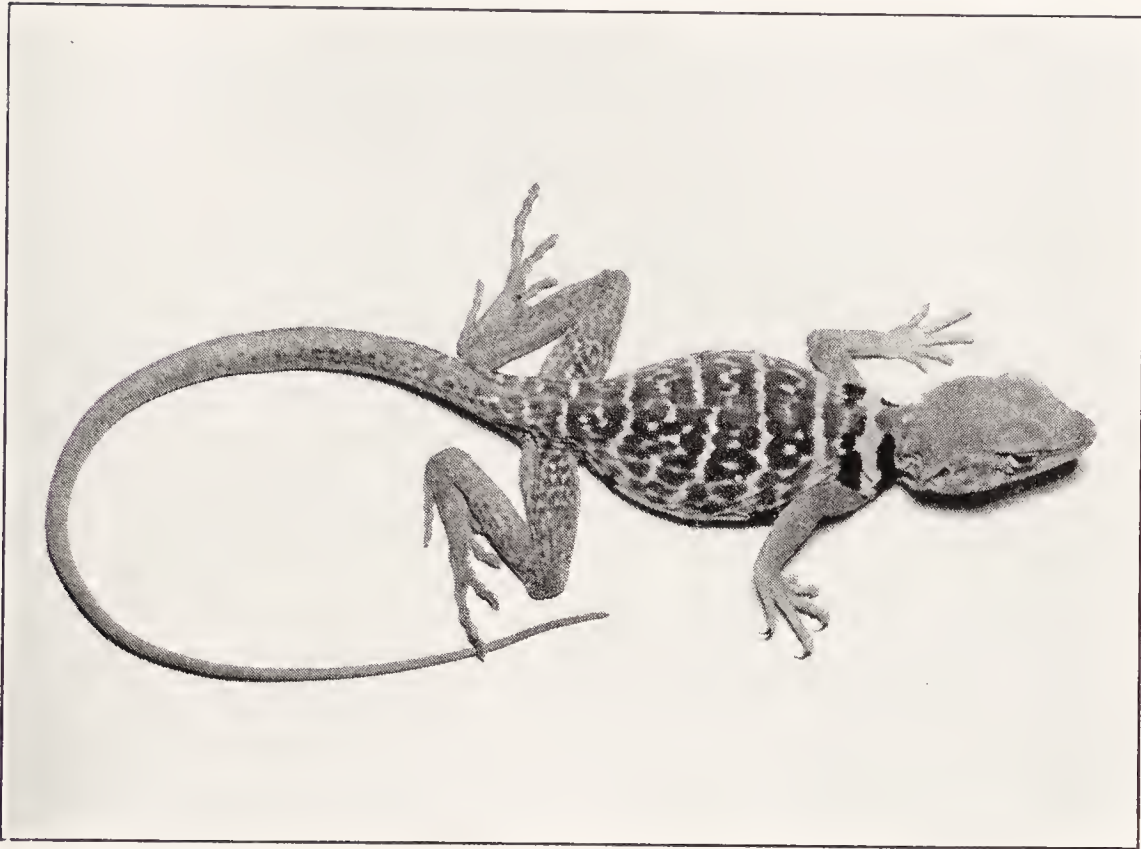
This gecko is similar in appearance to the Desert Banded Gecko but differs from the latter in retaining the light line around the back of the head throughout life as well as in being slimmer and more delicate in appearance. The San Diegan Banded Gecko is also somewhat smaller, reaching a length of about 5 inches. The top of the head is uniform purplish-brown in color, rather than spotted as is the top of the head of its desert cousin. The San Diegan Gecko is found from the western slopes of the mountains to the coastal foothill region of the county, but is not common anywhere in this area. It seems to prefer localities where granite boulders are plentiful, seeking shelter in crevices and also under rock flakes and cap rocks during the daylight hours and coming forth only at night. Unlike its desert relation, this gecko has never been collected on the road at night. The inability thus far to collect specimens under such conditions may perhaps be due to the darker coloration of this lizard, a factor that would make it much more difficult to see against a dark background than its light-colored desert counterpart. This and the preceding lizard utter a peculiar squeal when annoyed. Both the San Diegan and Desert Banded geckos differ from the Tubercular Gecko in having eyelids and in lacking the adhesive pads at the tip of the toes. Because of the comparative rarity of this lizard, the Zoo would be grateful for any specimen that might be donated to its collection. The Zoo is pleased to receive any reptiles that may be donated to its collection, particularly those that are not common in the county and whose collection and donation might contribute to our knowledge of the distribution and classification of the local species.



DESERT IGUANA

Dipsosaurus dorsalis dorsalis

This is one of the largest and most attractive lizards found in the county. It is sometimes called Desert Crested Lizard, a name derived from the presence of a row of enlarged but short, pointed scales that extend from the back of the head down the middle of the back and onto the tail. Fully grown individuals attain a length of about 16 inches. These lizards present a generally whitish coloration, overlaid, particularly on the sides of the body, by a network of reddish-brown lines while the top and sides of the tail are marked with a series of spots or crossbars of the same color. There is also a series of inconspicuous gray transverse bars across the back. In San Diego County, the Desert Iguana, as its common name indicates, is found only in the desert area. It prefers sand dunes or flat, sandy or gravelly areas for its habitat, although an occasional one may be seen on the boulder-strewn slopes of a desert hill. If stalked carefully, the lizard may allow its would-be captor to approach within reaching distance before taking alarm and dashing off at full speed into the security of some dense, thorny thicket or the depths of a rodent burrow. When running at top speed they may sometimes raise the forepart of the body off the ground and run only on the back legs. In their natural habitat the food of these lizards consists mainly, if not entirely, of plant material such as leaves and blossoms. When foraging they may sometimes be found well up in the branches of shrubs such as the Creosote bush. In captivity this lizard makes an excellent pet and does well if kept under warm, dry conditions, feeding readily on a diet of lettuce and plant blossoms. It will also take mealworms.



WESTERN COLLARED LIZARD
Crotaphytus collaris baileyi

The Collared Lizard, one of the most spectacular lizards found in this region, is normally an inhabitant of boulder-strewn slopes of desert hills and mountains. Locally it has spread across the southern part of the county onto the coastal side of the mountains, having been taken as far west as Tecate Mountain on the international boundary. The coloration of the lizard consists of a dark-brown or tan ground color which, on the back, is crossed by several white or light-yellow lines and is also sprinkled with small light spots. The neck is crossed by a double black collar separated by a white band. Occasional specimens may have only a single black collar. Adult males attain a length of about 14 inches; females are somewhat smaller. These lizards possess a voracious appetite, their diet consisting of insects of various kinds together with lizards of suitable size. If the opportunity presents itself, they will even eat smaller individuals of their own kind. The Collared Lizard is one of the most vicious of our local lizards and a freshly captured individual will bite its captor fiercely; but, although the teeth will occasionally pierce the skin, the bite is no more than a rather strong pinch. They become more or less accustomed to handling after a short period in captivity. When deliberately annoyed, the lizard will face its antagonist, raising the forepart of the body by straightening the front legs, and swelling the body tremendously by gulping large amounts of air into the lungs. A vertical throat fan is also usually quite prominently displayed, while the mouth is opened in a menacing manner, the whole aspect of the angered lizard being most threatening. Like several other desert lizards, the Collared Lizard can travel quite rapidly, propelling itself by means of its back legs only.



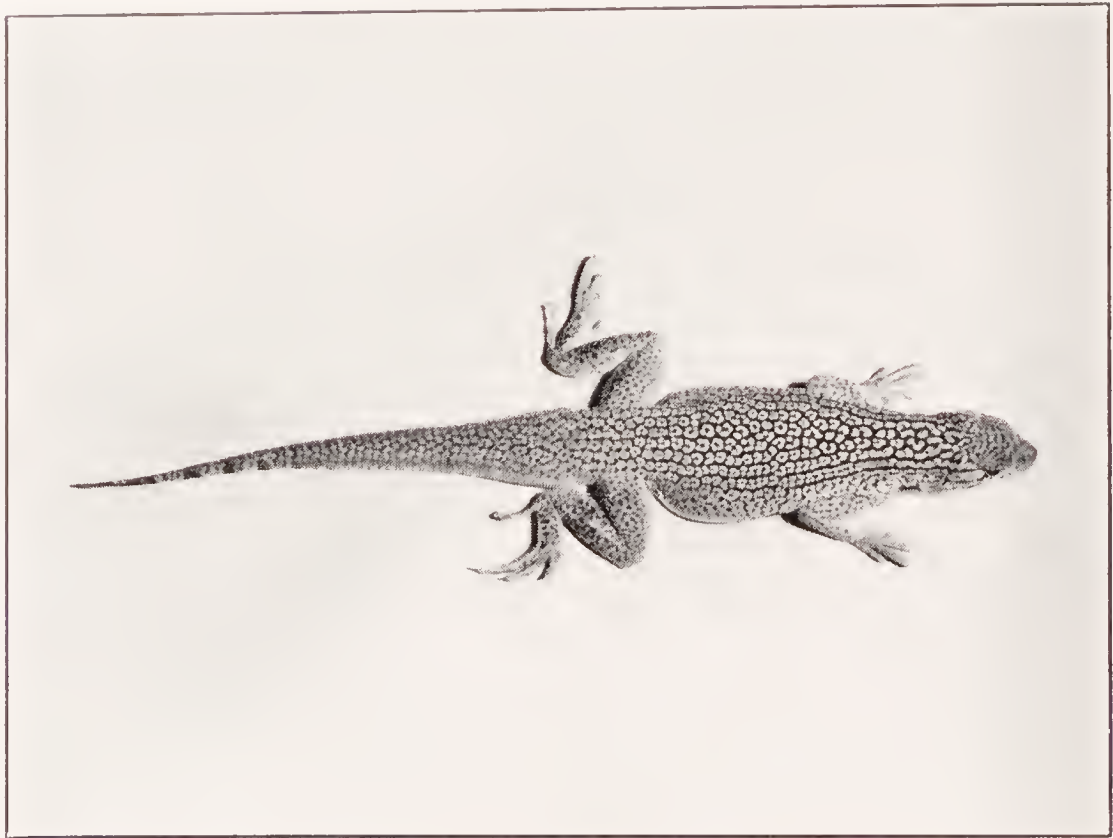
LEOPARD LIZARD
Crotaphytus wislizenii

In San Diego County, the distribution of this lizard is almost wholly confined to desert areas. But, like its close relative, the Collared Lizard, the Leopard Lizard has penetrated the coastal side of the mountains via the southern border of the county, having been taken as far west as Potrero. It is not abundant anywhere in its local area of distribution. On the desert side of the mountains the preferred habitat of this lizard seems to be more or less flat, rocky or sandy locations, although it may be encountered in dune areas that support some plant growth. The ground color of this lizard varies from light- to dark-gray above and white or nearly so below. The head may be finely spotted or immaculate on top, while the back and upper surfaces of the hind limbs are covered with large dark-brown spots which give the lizard its common name. The back is usually crossed by several narrow light-yellow or nearly white lines. The throat is white, longitudinally streaked with several dark-gray lines. During the breeding season the females assume a striking nuptial coloration consisting of widely spaced red or salmon-colored vertical streaks along the side of the body. The undersurface of the tail as well as the belly may also bear a more or less extensive crimson suffusion at this time. The diet of these lizards is composed of insects as well as other lizards. Vegetable matter may be eaten, but whether this type of food material is accidentally or purposely taken seems not to be known. The Leopard Lizard is an irascible species and is quite capable of producing a painful pinch with its strong jaws, and even occasionally piercing the skin with its short but sharp teeth. This is one of our larger local lizards, attaining a length of about 16 inches.



GREAT BASIN CHUCKWALLA
Sauromalus obesus obesus

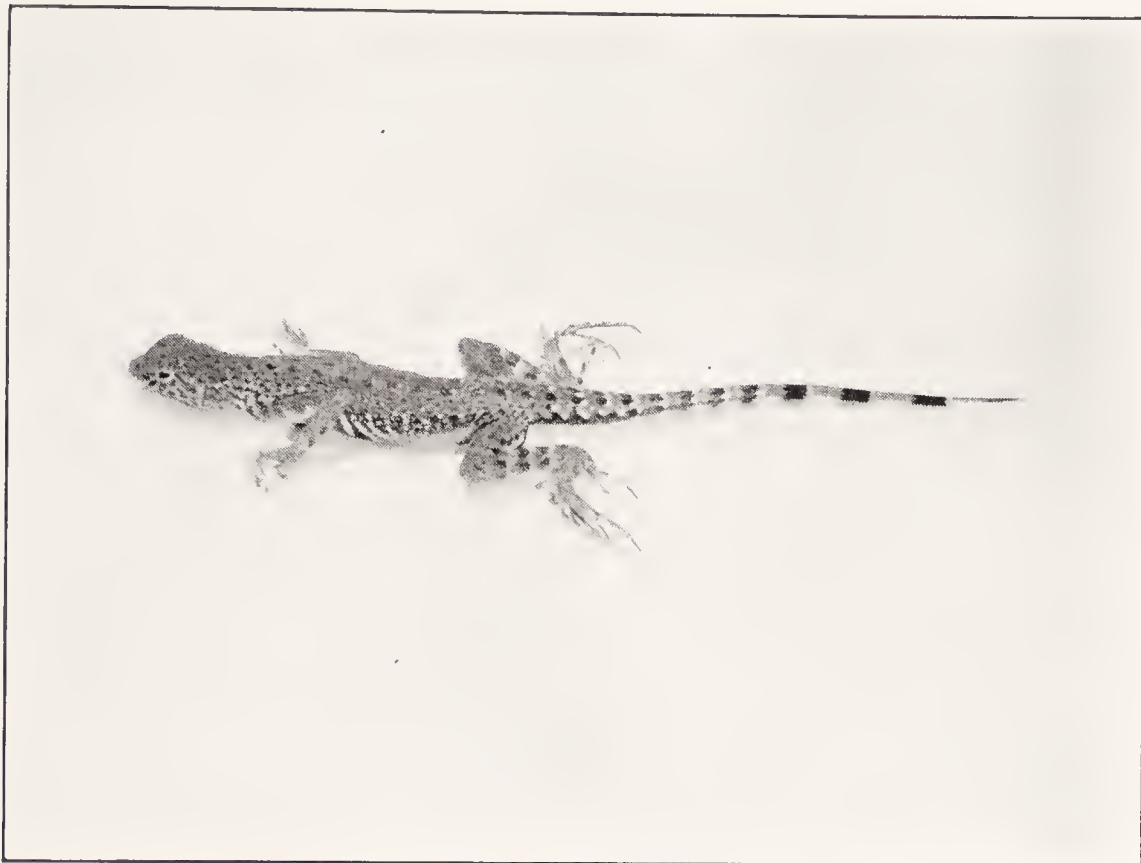
The Chuckwalla is encountered only on the desert side of the mountains in the desert foothills and mountains, the preferred habitat being one of rock-strewn slopes. It is perhaps most noted for its rather unusual method of defense. When frightened, the chuckwalla runs into a rock crevice and inflates itself to such an extent that its extrication is virtually impossible. The inflation is accomplished by the animal's gulping a large amount of air into the lungs, the consequent swelling resulting in an increase of nearly 60 percent in the body volume. To secure chuckwallas, the Indians, who included these lizards in their diet, reputedly deflated them by thrusting a sharpened stick into the lizard's side. A more humane method is to insert a stick into the crevice and gently but persistently tap the animal on the snout. This will usually cause the chuckwalla to back far enough out of the crevice so that it may be seized by the base of the tail or the back legs. These lizards display a pronounced sexual difference in coloration and pattern. Adult males have the head, chest, limbs, nape and rump colored black with the area between the shoulders and rump dark- to light-gray. Adult females are more or less densely spotted with dark-brown over the head, chest, shoulders, and limbs with the area between the shoulders and the rump ranging from light- to dark-gray traversed by three or four dark crossbands. Juveniles and subadults are banded across the back and neck with four or five dark-brown or black bands. The tail in both sexes and at all ages bears several more or less conspicuous broad rings of dark-brown or black. The chuckwalla reaches a length of about 15 inches. Captive specimens usually make good pets and do well on a diet of lettuce and blossoms.



COLORADO DESERT FRINGE-TOED SAND LIZARD

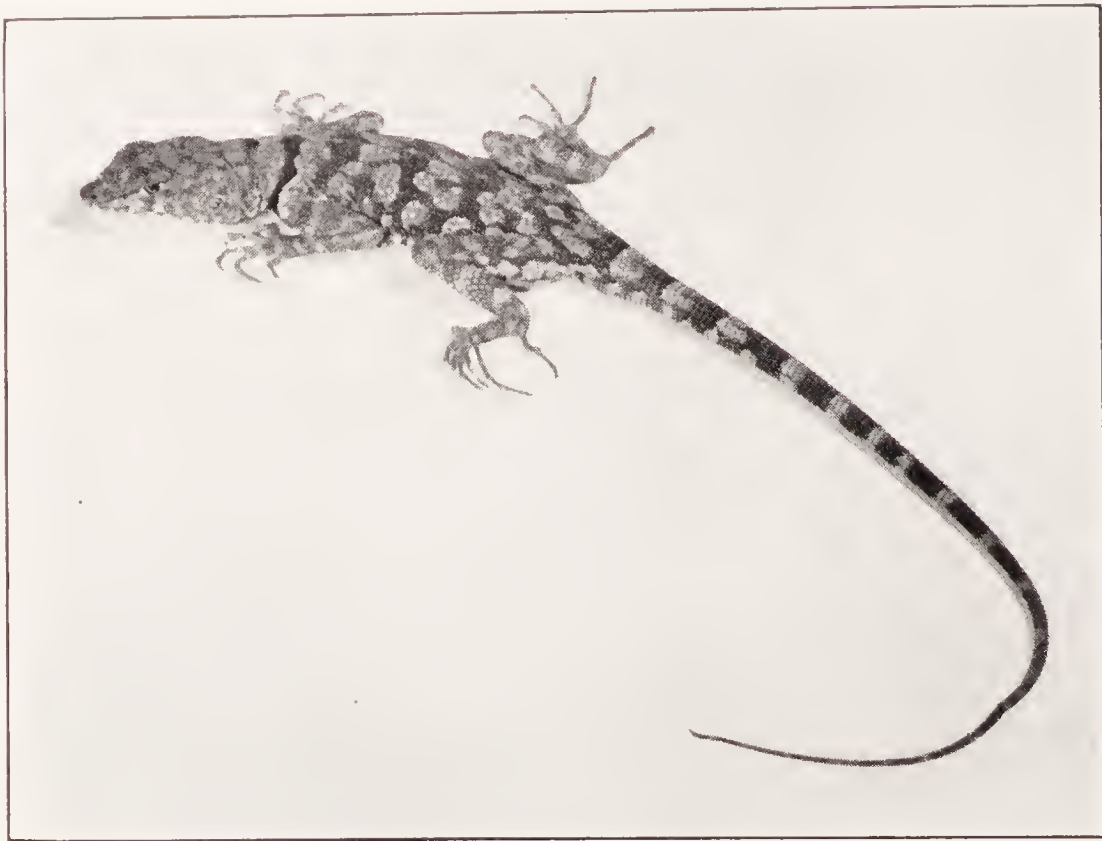
Uma notata notata

This lizard is a sand-dune dweller and in this county has been collected only in the vicinity of Benson's Dry Lake and Clark Dry Lake in the Borrego region. In adaptation to its environment it has developed several features of interest. Among these are elongate scales on the sides of most toes, forming a fringe that serves the lizard as "snowshoes" as well as aiding it in burying itself beneath the sand. Other modifications are nasal valves that prevent the inhalation of sand particles while the lizard is buried and a shovel-shaped snout that facilitates the seemingly effortless burying process by which these lizards may conceal themselves. When available, rodent burrows are entered for concealment; however, at other times the lizard may "swim" into the sand, usually at an abrupt right angle to the direction of its speedy retreat. The lizard dives into the sand snout first, pushing with its hind legs while the fore limbs are laid back alongside the body. A few side-to-side wiggles of the rear portion of the body and tail completes the process by settling the sand over these parts. Should there be considerable leafy coverage close to the dune surface, the lizard may simply lie motionless under it relying upon its protective coloration and the disruptive shadow pattern of the foliage for concealment. This lizard's coloration and pattern consist of a light-gray, or whitish ground color overlaid on the neck and top of the body with a network of black or dark-brown lines through which the ground color appears as light islands, each with a central spot of more or less intense reddish-brown. The belly is immaculate except for a nearly circular black blotch on either side surrounded by a reddish-orange color. In specimens with complete tails, the underside of the tail is crossed by several black bars. Large specimens attain a length of about 9 inches.



SOUTHERN CALIFORNIA GRIDIRON-TAILED LIZARD
Callisaurus draconoides gabbii

The Gridiron-tailed Lizard is found only on the desert side of the mountains, usually in gravelly or sandy areas. Superficially this lizard resembles the Fringe-toed Sand Lizard in appearance but, besides lacking the well developed toe fringes, is a much less robust lizard and is additionally distinguished by the presence of black rings that completely encircle the latter half of the tail. It possesses a short shovel-shaped snout that it employs in burying itself in the sand. The ground color of this lizard is light- to dark-gray finely spotted with yellow or white and with paired dark spots down the middle of the back. On the forward half of the underside of the tail there are several relatively large, almost circular black spots that enlarge and completely encircle the tail on its latter half. The limbs are more or less conspicuously banded. In adult males the belly is marked on each side with a pair of diagonal black bars enclosed in a bluish or blue-green field. These bars extend a short distance onto the side of the body. In adult females the belly is immaculate except for very faint indications of the more prominent diagonal black bars of the males. The Gridiron-tailed Lizard is one of the most common desert lizards, but it is particularly difficult to capture because of its shyness and great speed. While running, the tail is carried curled over the back and, when the lizard abruptly ends one of its bursts of speed, this member is slowly waved from side to side while still arched over the back. Like some other desert lizards, the Gridiron-tail will run upon its hind legs when traveling at full speed. The food consists principally of insects although leaves and blossoms of desert plants may be eaten occasionally. It attains a length of about 9 inches.



BANDED ROCK LIZARD
Streptosaurus mearnsi

This species reaches a length of about 11 inches, two-thirds of which is tail. The head and body are considerably flattened, an adaptation that enables the lizard to take refuge in narrow rock crevices and also beneath rock flakes on the boulders on which it prefers to live. In the United States this lizard is found only on the eastern or desert slopes of the Peninsular Range from San Geronimo Pass south to the Mexican border. Above, the coloration consists of a light-brown or gray-green ground color peppered with light spots. The back is traversed by about a half-dozen dark-brown or blackish bands. Just in front of the shoulders there is a single black collar narrowly edged behind with white. The tail is crossed by a number of dark bands separated by lighter interspaces. In adult males each side of the belly bears a large patch of dark-blue and in the adults of both sexes as well as the young the throat bears a network of dark-blue. Juvenile specimens have a pinkish cast to the ground color of the back. These lizards are fairly abundant among the boulders in the vicinity east of Jacumba near the head of Mountain Springs Grade. They may be most easily caught by prying off rock flakes under which they seek cover. They are most active and numerous early in the day. When alarmed they will either disappear into rock crevices or dash out of view onto the opposite side of the boulder upon which they have been sunning. These lizards are so well adapted to a rock dwelling existence that they may be seen traversing a rock surface while hanging in a nearly upside down position. Unless moving or silhouetted against the skyline, their pattern and coloration render them most difficult to see.



LONG-TAILED BUSH LIZARD

Urosaurus graciosus

A large adult of this species reaches a length of about 8 inches, of which the head and body will comprise about a third. It is a desert dweller being moderately common among the larger trees and bushes of the desert dunes, flats and washes. When in the branches of a tree or shrub the lizard usually holds itself parallel with the branch upon which it is resting thereby making detection difficult unless the lizard happens to be moving. Careful and patient scrutiny of branches is necessary to locate these elongate little lizards. Although spending a great deal of time in branches, they will not hesitate, if pursued, to take refuge in ground holes that may be near the base of the bush. A close examination of the Long-tailed Bush Lizard will show a broad band of enlarged keeled scales, usually 6 scales wide, extending down the center of the back, these scales being sharply set off from the scales bordering them on the sides. The general coloration varies from light- to dark-gray, and the change from one of these colors to the other may be quite rapid. The back is crossed by about 6 more or less obvious and irregular crossbands between the shoulders and the rump. Adult males have a pale greenish patch along either side of the belly and a pale yellowish-green central throat patch. Considerable success hunting these lizards at night with a flashlight has been reported, a careful search among the branches of desert bushes revealing the lizards by light reflection from their belly scales. In the Borrego Desert region specimens are frequently found asleep on the road at night. Just what they are doing abroad at night is not known. These lizards feed upon insects.



SOMBER ROCK LIZARD
Urosaurus microscutatus

This lizard is primarily an inhabitant of the rocky desert foothills in the eastern portion of San Diego County. Its distribution in this area appears, however, to be confined to a few rocky canyons rather than being continuous throughout the foothill area. It has also been taken on the coastal side of the mountains in the vicinity of Cottonwood and Deerhorn Flat. This lizard differs from both the California Side-blotch Lizard and the Desert Side-blotch Lizard not only in lacking a dark-blue or blackish spot on either side of the body just behind the front legs, but also in its generally darker coloration. In the field it is usually conspicuous, even at a distance, because of the contrast of its dark color with the lighter colored background upon which it may be found sunning. It seems to be much less shy than its relatives, the Side-blotch Lizards, and may be more closely approached before it takes alarm and flees to safety. On the upper surfaces of the lizard, the general coloration is sooty and the back bears several irregular transverse black bands, the one immediately in front of the shoulders usually being the most conspicuous. Along the rear borders of these bands are scattered, more or less conspicuous, light spots. Females have the belly colored a light-gray or whitish, flecked with small dark dots. Males have a bright blue patch along either side of the belly and the throat is orange in color with a central spot of yellow. This lizard has been taken in the Jacumba-Mountain Springs region and also at Palm Canyon and Tubbs Canyon in the Borrego area. At Palm Canyon it frequently is seen running about on the trunks of the palm trees. This is a small species, reaching a length of about 6 inches. It feeds upon insects.



SOUTHERN CALIFORNIA SIDE-BLOTCH LIZARD
Uta stansburiana hesperis

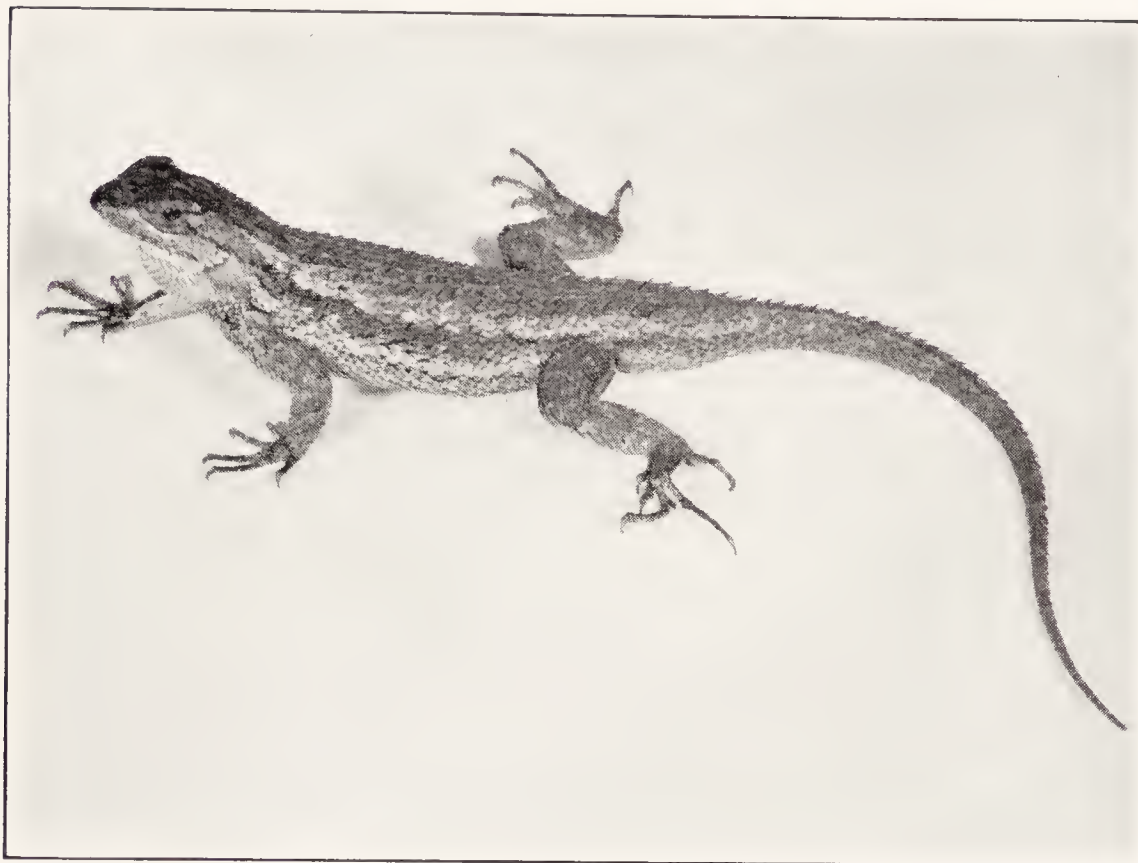
This subspecies and its desert counterpart next described are called Side-blotch lizards because of the presence of a prominent dark-bluish or black spot on either side of the body just in back of the front leg. The Southern California Side-blotch Lizard is a comparatively small lizard reaching a length of about 6 inches. It is found from the coast to the eastern slopes of the mountains. In some regions it may be the most abundant lizard seen. A pronounced difference in pattern exists between adult males and females. The back of an adult male generally has a very speckled appearance with little or no indication of a light line down either side of the body. Females and juveniles have a light stripe down either side of the back and usually between these there are a series of dark wavy lines or chevron-like markings from the back of the neck onto the base of the tail. In pattern and coloration this lizard is very similar to the Desert Side-blotch Lizard except for the customary lighter color tones that prevail in the latter. On the light sands of beach areas, however, the coastal Side-blotch Lizard may become fully as light colored as perhaps even the lightest desert specimen. These lizards are rather unwary and may sometimes be easily caught by hand. When alarmed they will seek refuge beneath small rocks, boards or other debris as well as in rodent holes and in burrows which they excavate themselves. The technical differences by which the coastal and desert Side-blotch Lizards are distinguished will not be presented here, but the two subspecies may be adequately separated on the basis of their distributions. The Southern California Side-blotch Lizard lives upon a diet of insects and because of its abundance it is undoubtedly very beneficial in insect control.



DESERT SIDE-BLOTCH LIZARD

Uta stansburiana stejnegeri

As noted previously, this lizard is the desert counterpart of the Southern California Side-blotch Lizard. They are similar in size, large adults reaching a length of about 6 inches. The Desert Side-blotch Lizard is one of the most abundant lizards in the desert and desert foothills and may be seen in a variety of situations as on boulders, rocky ground, sand dunes, etc. When disturbed they may scurry for protection beneath rocks or into rodent holes or into burrows of their own making. They are frequently encountered sunning themselves in the early morning hours before the desert temperatures become too great for them to tolerate. They will reappear in the late afternoon, but, as with other desert lizards, seldom seem to be so abundant at this time of day as in the morning hours. This lizard is similar in pattern to the Southern California Side-blotch Lizard, but is considerably lighter in color than the majority of specimens of its coastal relative. The Desert Side-blotch Lizard has many enemies, being preyed upon by snakes as well as larger lizards. Collared and Leopard Lizards, both voracious predators, take their toll, while among the snakes the Side-blotch Lizard is beset by a greater array of reptilian gourmets. Among these are such snakes as the Red Racer, Desert Patch-nosed Snake and small rattlesnakes. Although normally abroad only during the daylight hours, specimens of the Desert Side-blotch Lizard are occasionally found asleep on desert roads at night. Like its coastal relative, the Desert Side-blotch Lizard is not overly wary and usually may be rather closely approached before it takes alarm and flees. This lizard lives on a diet of insects.



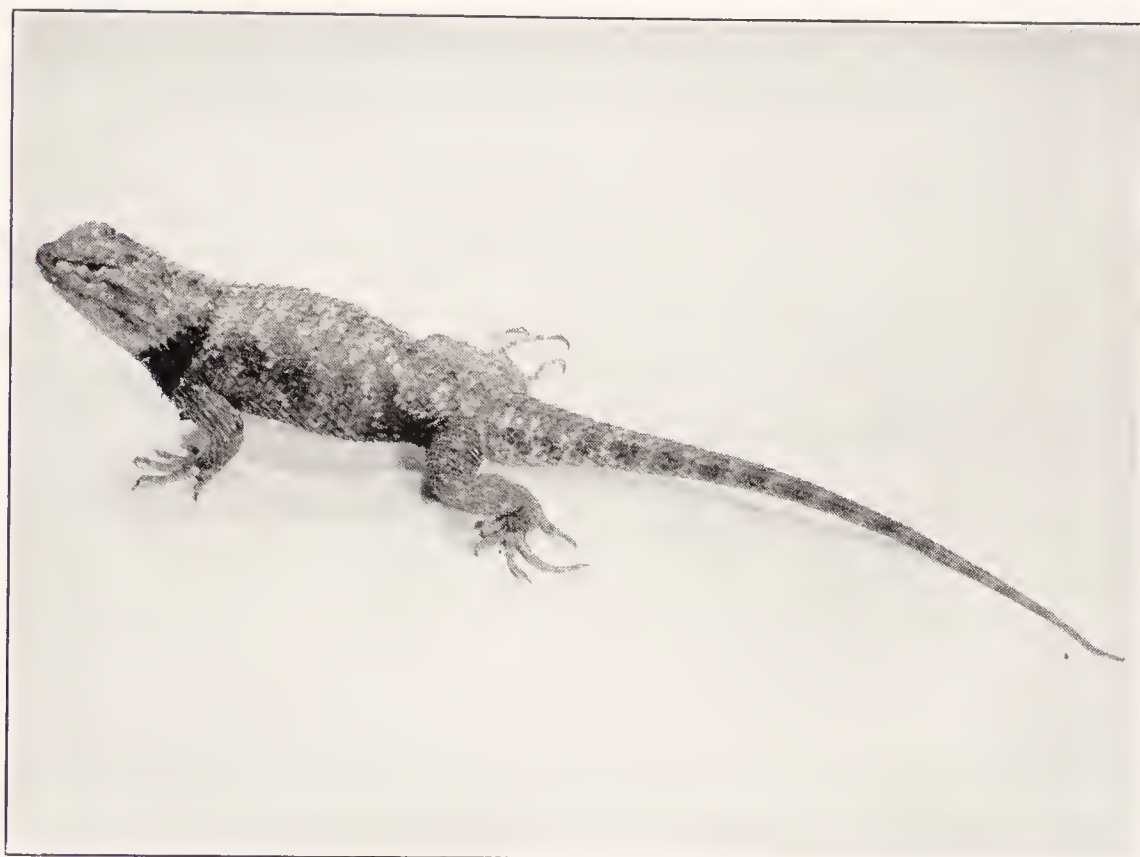
WESTERN FENCE LIZARD
Sceloporus occidentalis biseriatus

The Fence Lizard is one of the commonest lizards on the coastal side of the mountains, in some areas even exceeding the smaller Side-blotch Lizards in abundance. The Fence Lizard is found from the coast to the eastern slopes of the mountains. It commonly prefers wooded or rocky areas as opposed to a more open ground dwelling habitat, although it may sometimes be seen in open areas while foraging for the insects that make up its diet. This is a moderately large species, reaching a length of about 8 inches. The scalation on the back and on the tail is rough in appearance, each scale terminating in a sharp point and overlapping its fellow to the rear. The Fence Lizard is rather blackish in appearance, the back being crossed by several rows of wavy dark markings extending from the shoulders to the base of the tail. The tail bears dark bands above. Adult males have a bright blue patch along either side of the belly and also a bluish patch on the throat. Females and juveniles have these markings but they are much paler. The back of the thigh in both sexes is yellowish in color. Individuals of all ages may have one or two more or less prominent light-gray bands along both sides of the body. Like a good many of our local lizards, the Fence Lizard may frequently be seen performing its "bobbing" act, nodding the head and forebody rapidly up and down as an expression of alertness. The only other local lizards with which the Fence Lizard might be confused are the Southern Mountain Swift and the Granite Spiny Lizard. From the Swift, the Fence Lizard may be distinguished by the yellowish coloration on the back of its thighs. The Fence Lizard lacks the dark streaks that radiate from the eye to the lip in the Granite Spiny Lizard.



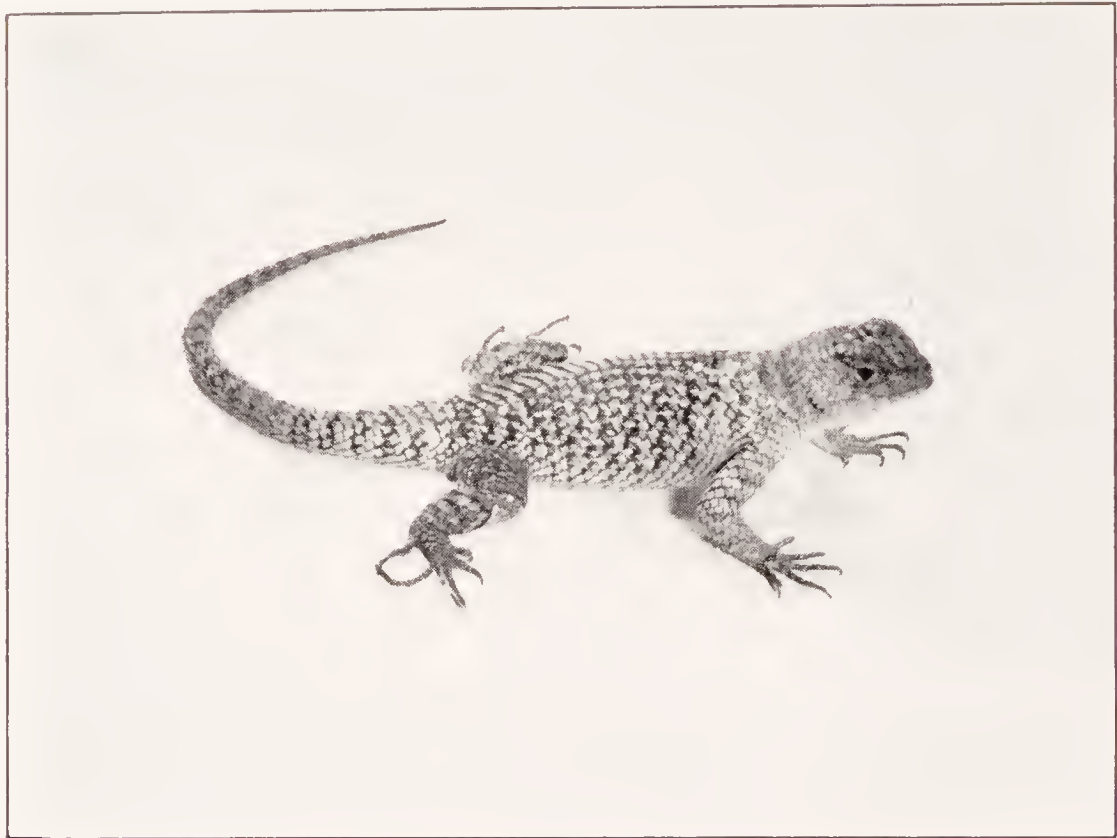
SOUTHERN MOUNTAIN SWIFT
Sceloporus graciosus vandenburgianus

In San Diego County the distribution of this lizard is discontinuous, the isolated populations occurring on a series of mountain tops. It is found only at elevations of between 4500 and 6000 feet at such localities as Cuyamaca, Laguna and Palomar Mountain. To the inexperienced eye specimens of this lizard will appear to be identical in appearance with the Western Fence Lizard. By direct comparison of specimens of both species the differences between them will become obvious. Both species occur together in this county but the Mountain Swift may be distinguished by its less coarse scalation, more pinkish or russet coloration along the sides of the body and also by the light-gray or whitish coloration of the back of the thigh. The back of the thigh in the Western Fence Lizard, it may be recalled, is yellowish. Adult Mountain Swift males have a bright blue patch along either side of the belly with a more or less prominent black edging separating these blue patches at the center of the belly. Males also have a blue throat patch. Females and juveniles are whitish below, the belly on either side washed with a less intense bluish color than is found in the males. These lizards may be observed on logs, stumps, or rock piles and when alarmed take refuge within or under the same objects. Like the majority of the lizards found in this county, the Mountain Swift lives upon a diet of insects including ants, beetles of various kinds, termites, moth larvae and grasshoppers. It has been described as jumping from rock to rock and dashing after insect prey with surprising agility. This lizard is the smallest member of the *Sceloporus* group found in this region, and reaches a total length of about 6 inches.



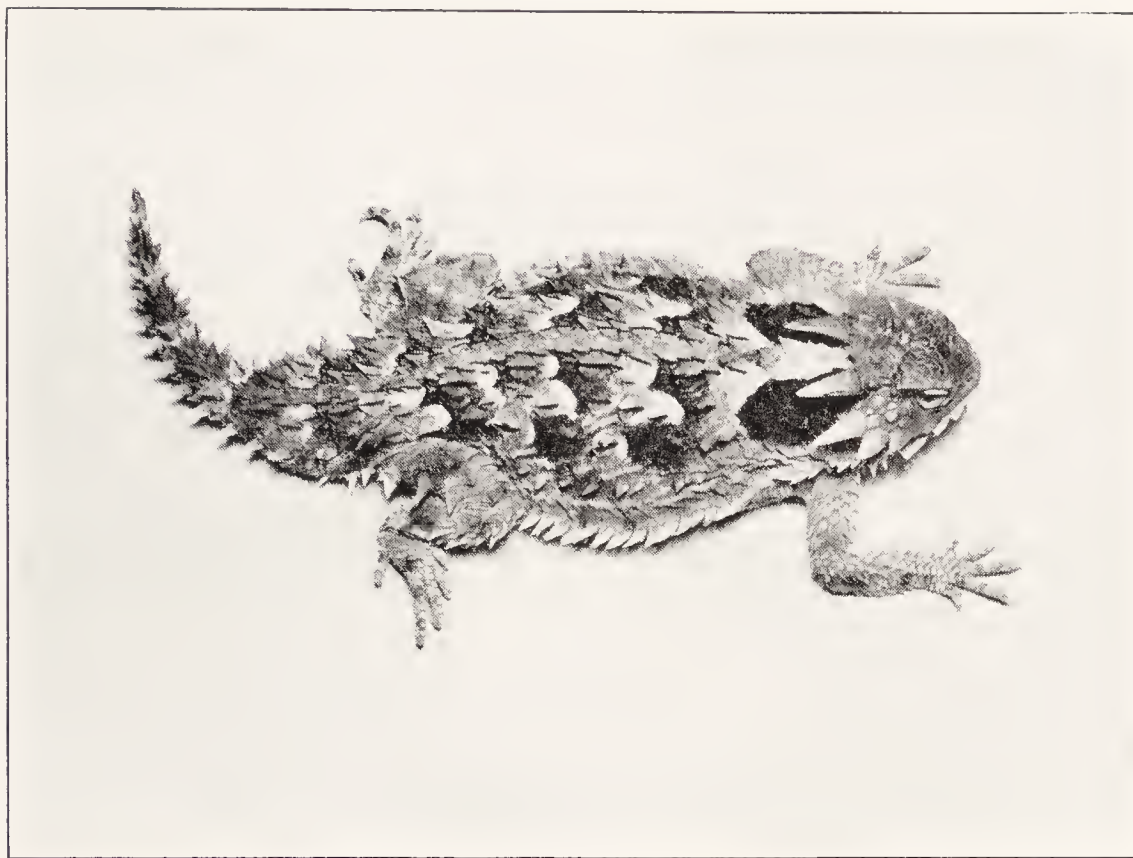
DESERT SPINY LIZARD
Sceloporus magister magister

This lizard is found only on the desert side of the mountains in San Diego County. It is a comparatively large lizard and the largest of the four species of *Sceloporus* found within the county limits. Adult males reach a length of about 11 inches; adult females are somewhat smaller. In coloration the adult males are usually light-yellowish or tan above, the scales of the sides of the body being dark-bluish with orange or yellowish spots near their centers. There are usually more or less prominent dark wavy lines across the back from the shoulders to the base of the tail. The tail bears dark bars separated by lighter interspaces. The adult males have brilliant bluish patches down either side of the belly, their inner edges edged with black. Females and juveniles are usually less brilliant in coloration throughout and also lack the bright abdominal color of the males. In both sexes and at all ages there is a dark-brown or black patch located just in front of the shoulders. This marking extends down the sides of the neck and, in adult males, onto the throat. Desert Spiny Lizards live in a variety of situations such as in rocky areas, in trees, in yucca groves, etc. They will leave both trees and rocks to forage. Trees, however, seem to be the preferred habitat in most areas and the lizards are frequently seen high in ironwoods and mesquite. This species is omnivorous in its feeding habits, both plant and insect food being taken, although the latter makes up the larger part of the diet. If so inclined the Desert Spiny Lizard will also eat other lizards of suitable size. It is rather wary and difficult to approach closely and will very rapidly seek safety in the heights of a tree or in ground holes.



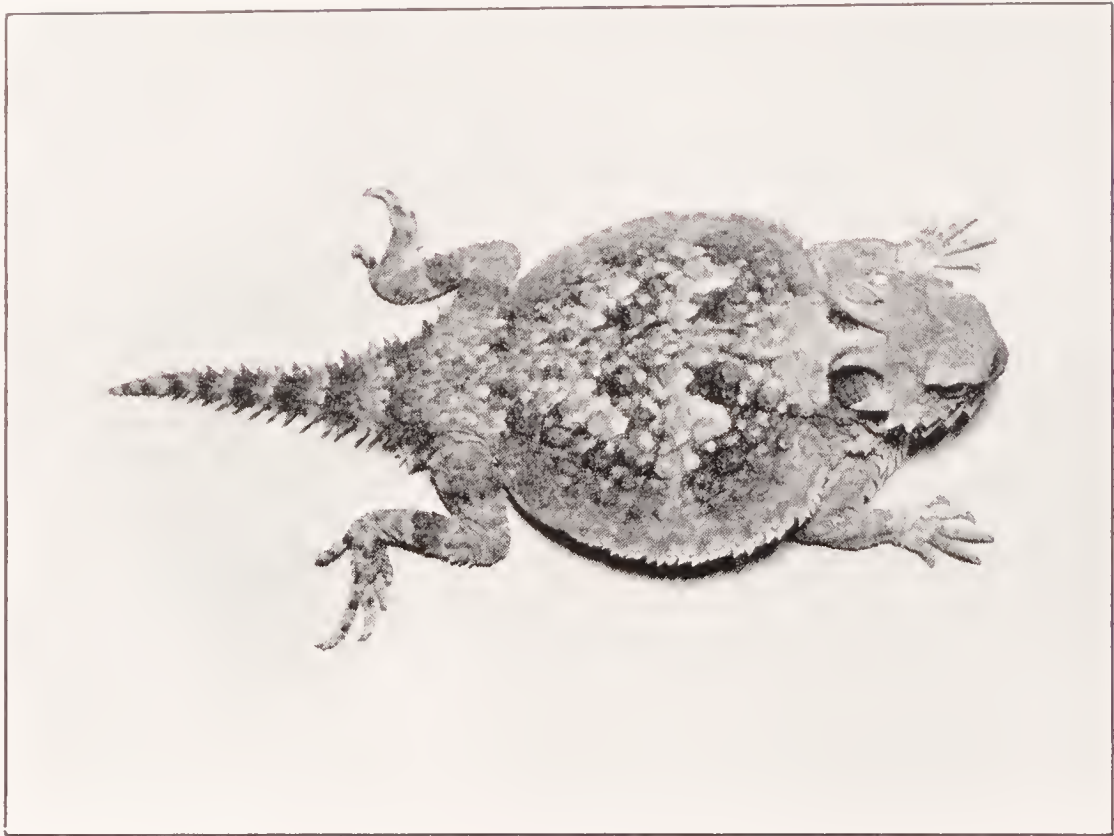
GRANITE SPINY LIZARD
Sceloporus orcutti orcutti

This very attractive lizard occurs in boulder strewn areas on both the coastal and desert sides of the mountains. It is primarily a Baja Californian species that has extended its range into the United States only as far north as southern San Bernardino County. On the coastal side of the mountains in San Diego County it is generally easy to distinguish from the Fence Lizard as the Granite Spiny Lizard reaches a larger size than the Fence Lizard and is also more brilliantly colored than the latter. In females and juveniles the body has a banded appearance, particularly on the forward half. The head and also the light interspaces between the bands on the forepart of the body are usually a pale reddish-brown in color. There are several dark bars radiating from the lower border of the eye. The tail is encircled with dark rings. The center of the back of an adult male is handsomely marked with a colorful broad band composed of 4 or 5 rows of scales with purplish centers, and the tail scales are metallic green. The sides of the belly, throat and undersides of the hind limbs are blue or greenish. Large specimens of the Granite Spiny Lizard are about 10 inches in length. This is a very wary lizard and it is impossible to approach most specimens closely, the lizard customarily retreating to the security of a rock crevice while an observer is still some distance away. On the coastal side of the mountains it has been seen in trees, although for this species this is exceptional. On the desert side of the mountains at Borrego Palm Canyon, Granite Spiny Lizards frequently may be seen on the trunks of the palm trees. In the fall young specimens may be found hiding beneath the flakes or exfoliations of boulders. As many as five recently hatched young, perhaps all from the same brood, have been discovered under a single flake. These lizards live upon insects.



SOUTHERN CALIFORNIA HORNED TOAD
Phrynosoma coronatum blainvillii

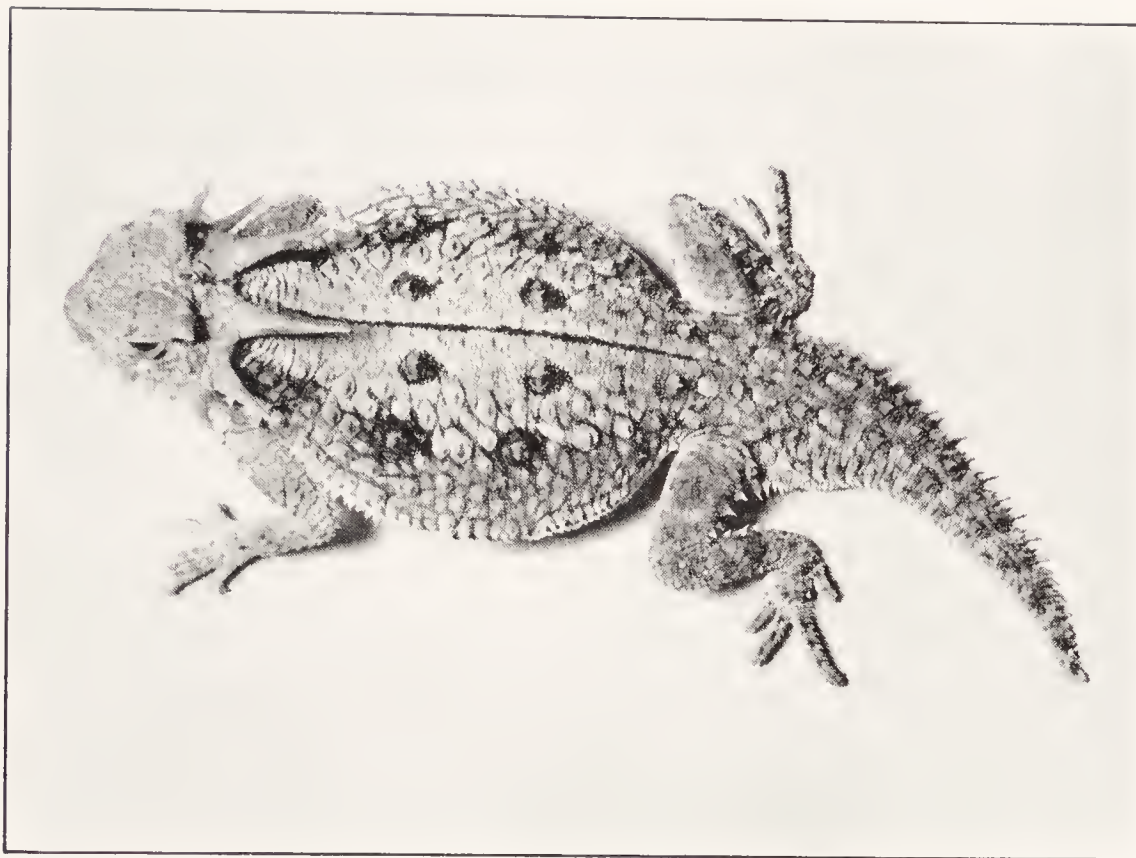
To describe these interesting and attractive little lizards as horned "toads" is technically incorrect for they are, of course, reptiles and not amphibians. However, the name horned "toad" is used here because of its familiar and widespread application as a common name for these creatures. Undoubtedly the most peculiar feature of these lizards is their ability to squirt or eject blood from the eyes, a process known to many as blood "spitting." Briefly stated, the squirting of blood from the eye is caused by a rise in blood pressure in the lizard's head, this increased pressure resulting in the rupture of blood vessels in a membrane associated with the eye. Primarily, the function of the rise of blood pressure in the head is to aid a lizard during skin shedding. The swelling of the softer head parts together with the tremendous bulging of the eyes cause a loosening of the old skin from the new skin beneath. The ejection of blood from the eyes appears to take place only when the lizard is greatly alarmed. In such an instance the ejection of blood probably serves as a more accidental than purposeful measure of protection to the lizard as a result of the startling suddenness of the ejection. The blood can cause no physical discomfort to an antagonist, for it is quite harmless. The Southern California Horned Toad varies considerably in coloration, specimens ranging from reddish-brown to yellowish, gray, or blackish. These colors will be found to match closely the color of the soil upon which the lizard has been living. This horned toad reaches a length of about 6 inches and is found from the coast to the western edge of the desert foothills. It lives exclusively upon a diet of insects.



DESERT HORNED TOAD

Phrynosoma platyrhinos platyrhinos

The Desert Horned Toad, although similar in appearance to the preceding species, does not reach quite so large a size, large adults being about $5\frac{1}{2}$ inches in length. The Desert Horned Toad, besides, is a more delicate appearing lizard with a smaller head and relatively shorter head spines. It is further distinguished by the presence of only a single row of long, pointed scales bordering the edge of the body, while the Southern California Horned Toad has two rows of these scales, one above the other, the lower series being smaller in size. Like other horned toads, the Desert Horned Toad will be found to vary considerably in coloration, depending primarily upon the color of the soil upon which the specimen was caught. These lizards, like a great many of our local lizards, have the ability to vary their color to some extent, paling or darkening in response to temperature or light influences. However, the fundamental color of the animal remains the same throughout its life. In this county this horned toad is found in both rocky and sandy areas and occurs as far west as the desert foothills. It is found more abundantly during late April and early May than at any other time of the year. Occasionally horned toads are eaten by snakes such as rattlesnakes and red racers, sometimes without apparent ill effect to the snake. However, the sharp head spines of large specimens can easily cause internal damage to the snake, the elongate spines cutting and puncturing the walls of the snake's stomach and even piercing through the body wall. For this reason they are evidently not too frequent items in the diet of lizard-eating snakes. By twisting the head from side to side the head spines of horned toads can cause some discomfort to human hands.



FLAT-TAILED HORNED TOAD

Phrynosoma m'callii

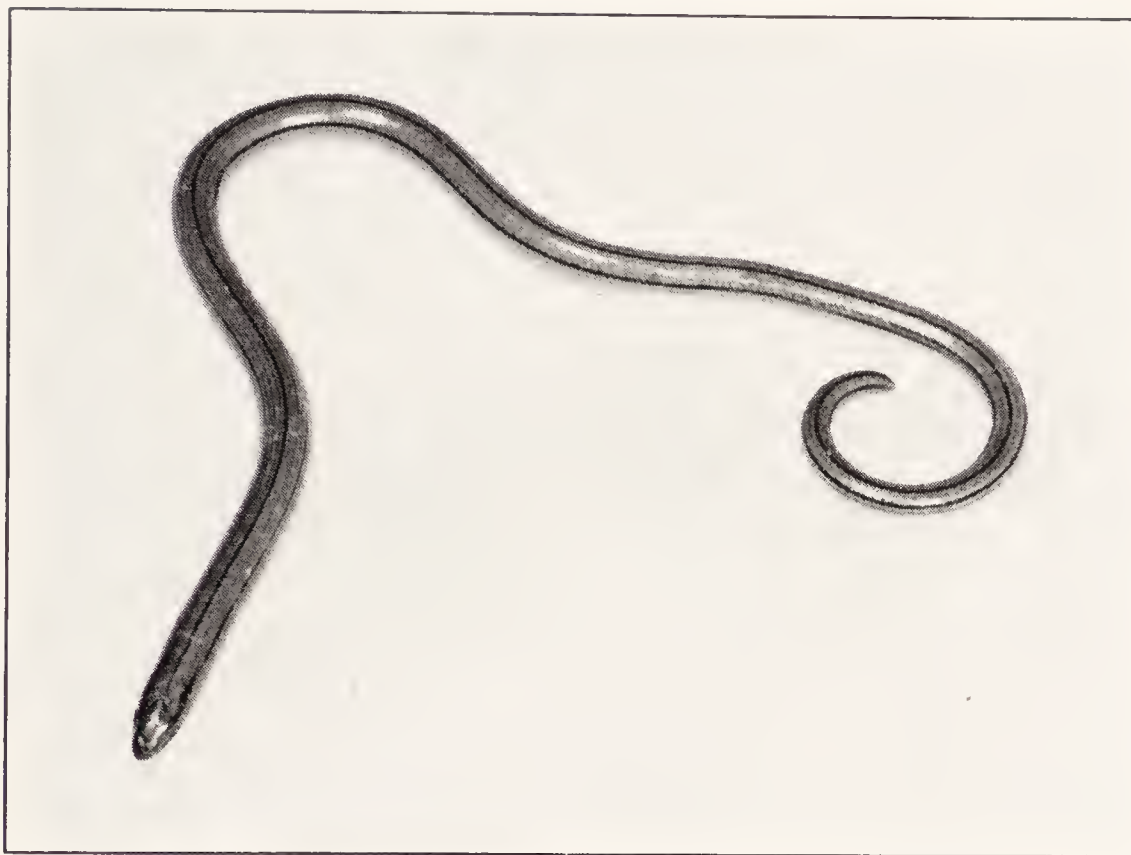
This horned toad occurs only in the desert areas of the county. It prefers sandy locations where its whitish or light-yellowish coloration blends quite well with a sandy background. From the Desert Horned Toad, this lizard may be distinguished by the dark line down the center of its back and also by its longer and broader tail. A further difference between these two species lies in the presence or absence of markings on the belly; in the Flat-tailed Horned Toad the belly is an immaculate white, while the Desert Horned Toad is usually spotted with black dots below. The Flat-tailed Horned Toad is notable for its delicate-appearing and very long and sharp head spines. By twisting and turning the head, the lizard may actually inflict punctures in the skin of its captor's hand. Like other horned toads, this species lives upon a diet of insects, ants being a favorite item. The Flat-tailed and the Desert Horned toads may be found living together at the same locality, usually with the latter being the more abundant species of the two. But in the flat sandy or gravelly desert at Ocotillo on Highway 78, the Flat-tailed Horned Toad seems to be the predominant species. At night this lizard, like our other horned toads, seeks protection by burying itself, thrusting its snout into the sand and wriggling downward and forward until the soil settles over its back completely concealing it from view. When temperatures are favorable, it emerges in the morning to hunt for food and bask in the warm rays of the sun. When sunning itself, this lizard, like other horned toads usually flattens the body considerably and tilts itself toward the sun so as to receive full benefit of the warmth. This lizard reaches a length of about five inches.



SAN DIEGAN ALLIGATOR LIZARD

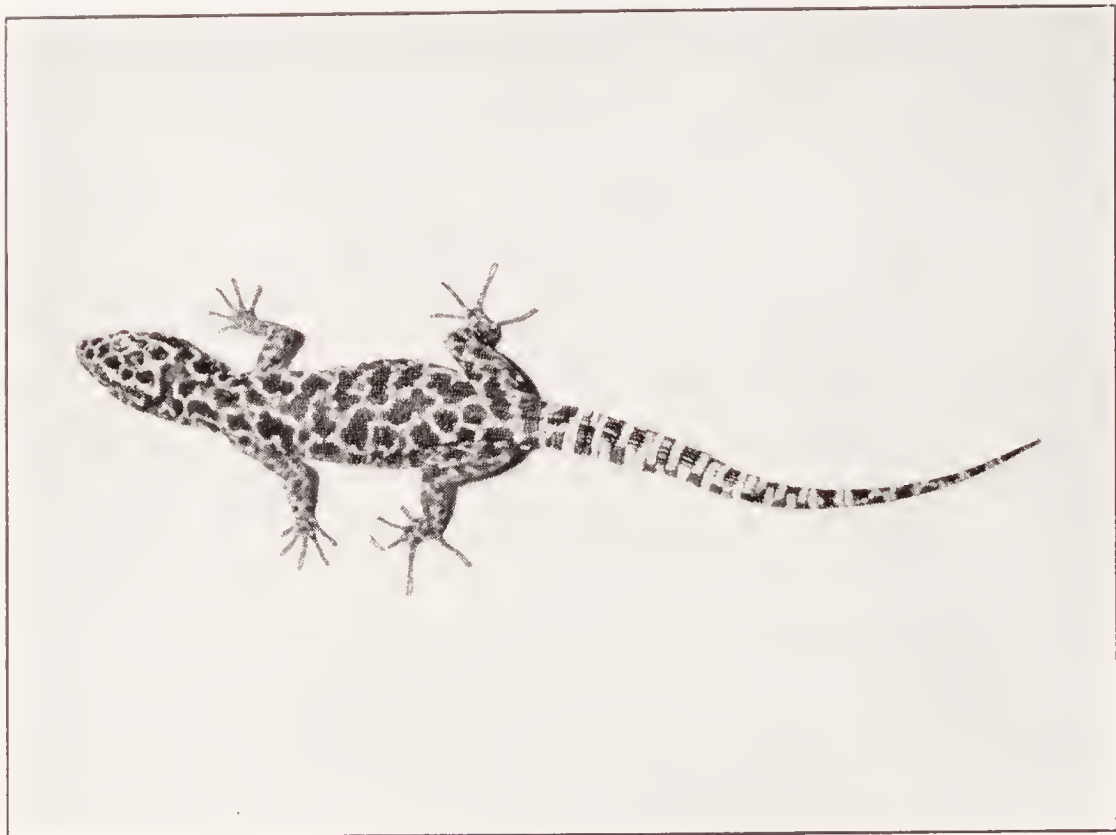
Elgaria multicarinata webbii

This lizard is probably more frequently encountered than any other by residents of the city. It is named for its supposed resemblance to an alligator, although it might be more appropriately known as the "snake lizard," for in most queries received at the Zoo concerning its identity, this lizard is usually described as being very snake-like in appearance. It appears to prefer moist situations and in the city it is fairly common in and about gardens and structures in residential districts. It is frequently seen climbing in bushes and vines and has also been observed as much as 6 feet above the ground on the trunks of eucalyptus trees, apparently foraging for insects and spiders beneath loose pieces of bark. Large adults may be somewhat in excess of 18 inches in length, about 12 inches of this being tail. Such specimens are rare, however, as the tails are quite brittle and easily broken and the regenerated portion never reaches the length of the original tail. This lizard usually has a dark-grayish head while the color of the back and the base of the tail is reddish or yellowish-brown crossed by several uneven black bands beginning at the neck and continuing onto the tail. Newly hatched young differ considerably in color from adults, appearing unicolor reddish or golden-brown on top of the back and tail. There are several pairs of small black spots down the back. In adults, the scales on the back are very rough, each having a ridge or keel down its center. In specimens of all ages there is a well developed fold of skin along either side of the body. These lizards will eat a wide variety of animal food including insects, frogs and small mice. They are beneficial in that they will consume Black Widow spiders as well as their egg cases.



CALIFORNIA LEGLESS LIZARD
Anniella pulchra pulchra

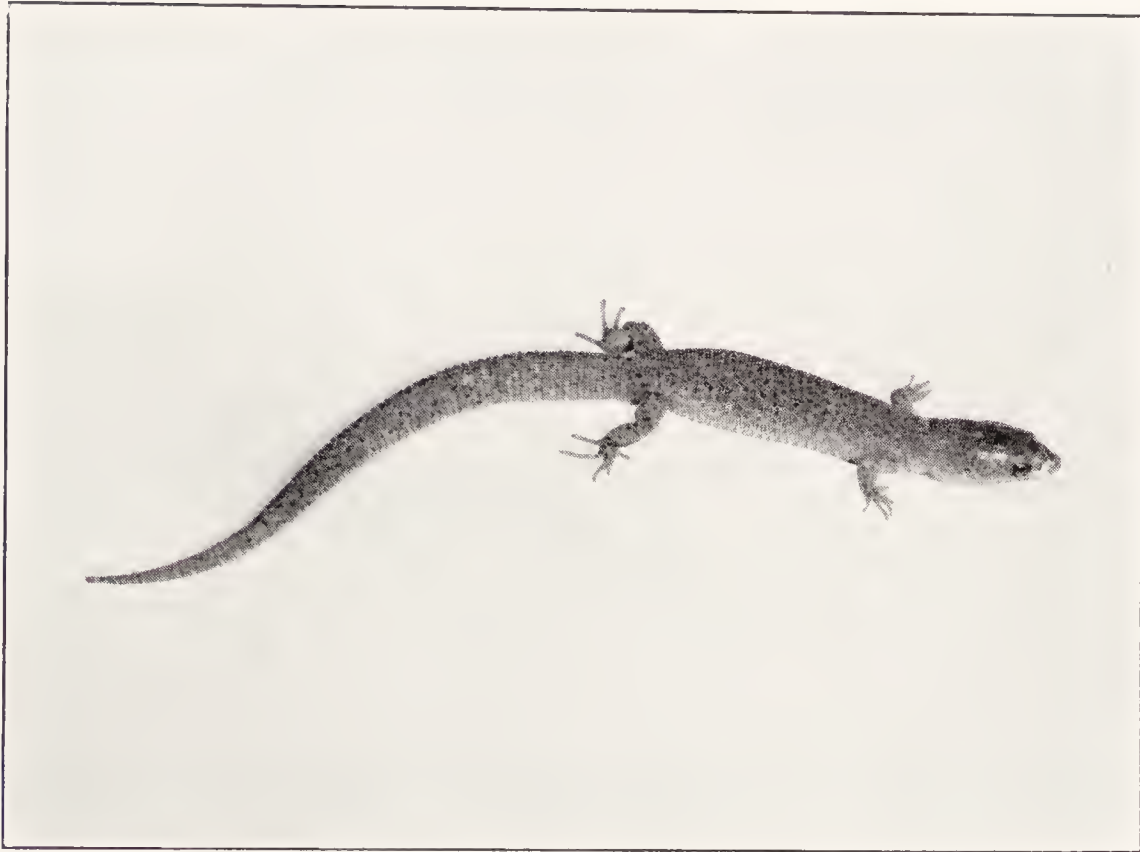
This unusual little lizard is often mistaken for a snake by the layman. This error is a natural one since the lizard is quite snake-like in appearance, lacking legs and also an external ear opening. However, a specimen closely examined will be found to possess well developed eyelids, an anatomical feature that no snake can claim. This lizard has a silvery coloration above, and is lemon-yellow below. The body is longitudinally striped with dark-brown or black, there being a single line of this color down the center of the back and usually one, sometimes more, similar stripes along either side of the body and continuing onto the tail. Between the more obvious dark stripes on the lizard there will be seen much fainter zig-zag lines of dark color, these formed by narrow darkened scale edges. The California Legless Lizard reaches a length of about 10 inches, with the tail, when complete, comprising about a third of the total length. As with most other local lizards, the tail is quite brittle and easily broken off. The new or regenerated tail is a short blackish cone about a quarter of an inch in length. The legless lizard is found throughout the county except in true desert situations. It is a burrowing lizard and may be most successfully searched for in beach sand dunes where it seems to be common in locations with a sufficient covering of plants. Digging the sand away from beneath the plants will reveal the lizards beneath the surface at varying, but usually shallow, depths and usually in close association with the root systems. These lizards prefer moderately moist but not wet soil. The legless lizard feeds upon small insects and insect larvae. From one to four young are born during the months of September, October or November.



GRANITE NIGHT LIZARD

Xantusia henshawi

The Granite Night Lizard is found on both sides of the mountains in San Diego County but only in rocky areas. It is a nocturnal lizard, coming forth at night to forage for food. It may be collected in the daytime, however, by prying off the exfoliations or flakes that adhere more or less closely to the parent granite boulders. When first exposed these lizards are light-struck, since they have no eyelids and have been resting in a dark place, and may be easily captured. They must be caught quickly, however, for in a matter of moments they become accustomed to the bright light and will make a quick getaway. The back is blackish overlaid by a network of yellow lines on a gray ground color. In the dark phase of its coloration this appears as a blackish lizard with a network of yellow lines over the back. In the light color phase, the coloration on the back is light-gray spotted with comparatively widely separated black blotches, and the tail is spotted or barred with black on a gray background. The Granite Night Lizard is a conspicuously flattened species and is thus quite capable of easily inserting itself into very narrow crevices in boulders, or beneath the flakes on the larger rocks. During the winter months these lizards are most frequently found on the south and west slopes of boulders where they will receive the full benefit of the sun's warmth during the day. During the warmer summer weather the situation is reversed, the lizards retreating beneath the flakes on the cooler or shaded sides of the boulders. At this season they are also usually found beneath thicker flakes. The Granite Night Lizard reaches a length of about 6 inches. Instead of laying eggs, as do the majority of our local lizards, it gives birth to its young, these being born in September or October.



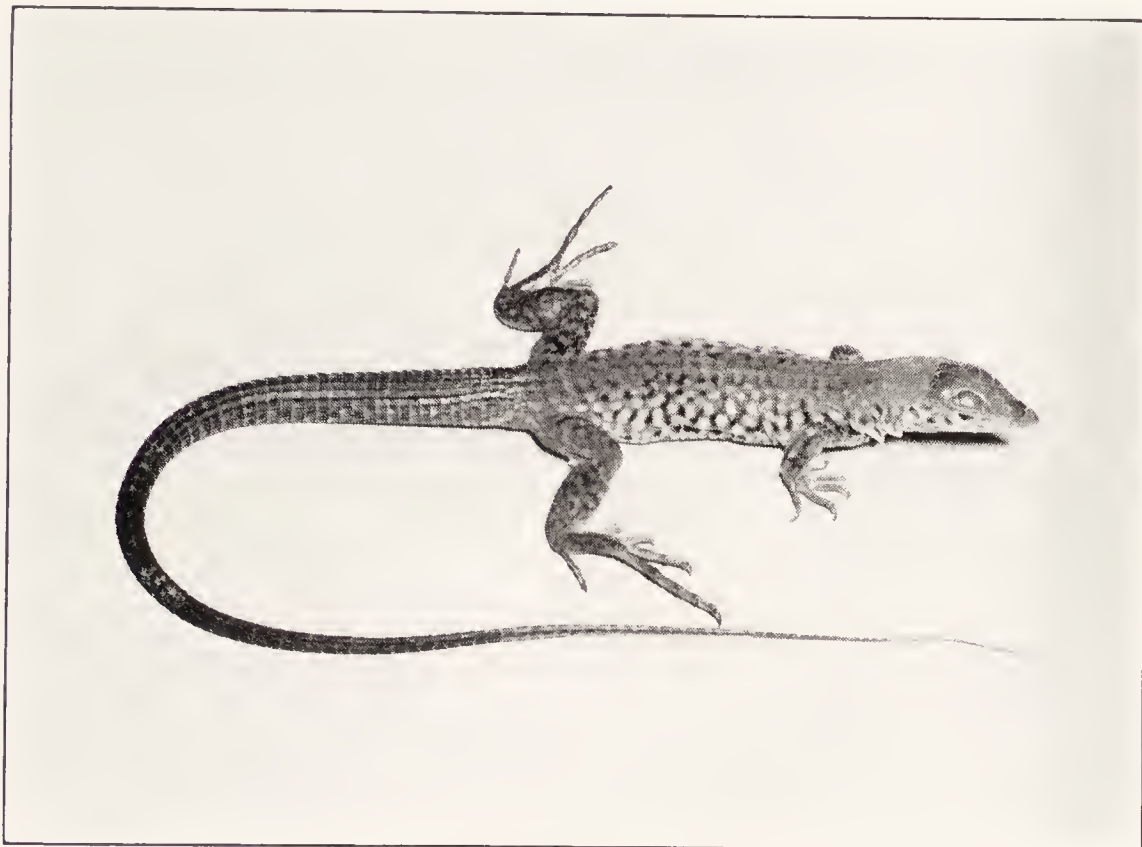
YUCCA NIGHT LIZARD
Xantusia vigilis

This little lizard has been taken in San Diego County only in San Felipe Valley and in the vicinity of Jacumba. In these areas it is always found in close association with the Spanish Dagger (*Yucca schidigera*). Like its near relative, the Granite Night Lizard, the Yucca Night Lizard lacks eyelids and is nocturnal, concealing itself during the day in or beneath the fallen dried or decaying debris of the *Yucca* plants. Specimens may be collected by overturning the old branches of these plants or by tearing the dead branches apart. A favorite retreat of these lizards lies within the space provided by the shrinkage of the stringy core from the hard, thin layer of outer wood of the dead branch. These lizards should be hunted in bright daylight rather than at dusk, for in the more intense light they will be momentarily light-struck and therefore more easily captured when their concealing covering is first removed. Also, collecting on a cool day will give a better yield of specimens than collecting during warmer weather, for under the latter conditions, the lizards will usually be more active and difficult to catch. This species reaches a length of about four inches. Its coloration may be either very dark-brown or light-tan, the general color depending usually upon the influence of temperature as well as the time of day. When concealed during the day the lizards are dark in color and with the approach of darkness they become light in color; as a result of excitement they may become light in color. The upper surfaces and sides of the body and tail are peppered with fine black spots. When annoyed these little lizards will sometimes roll over from one to several times in rapid succession. One or two young are born in August, September, or October.



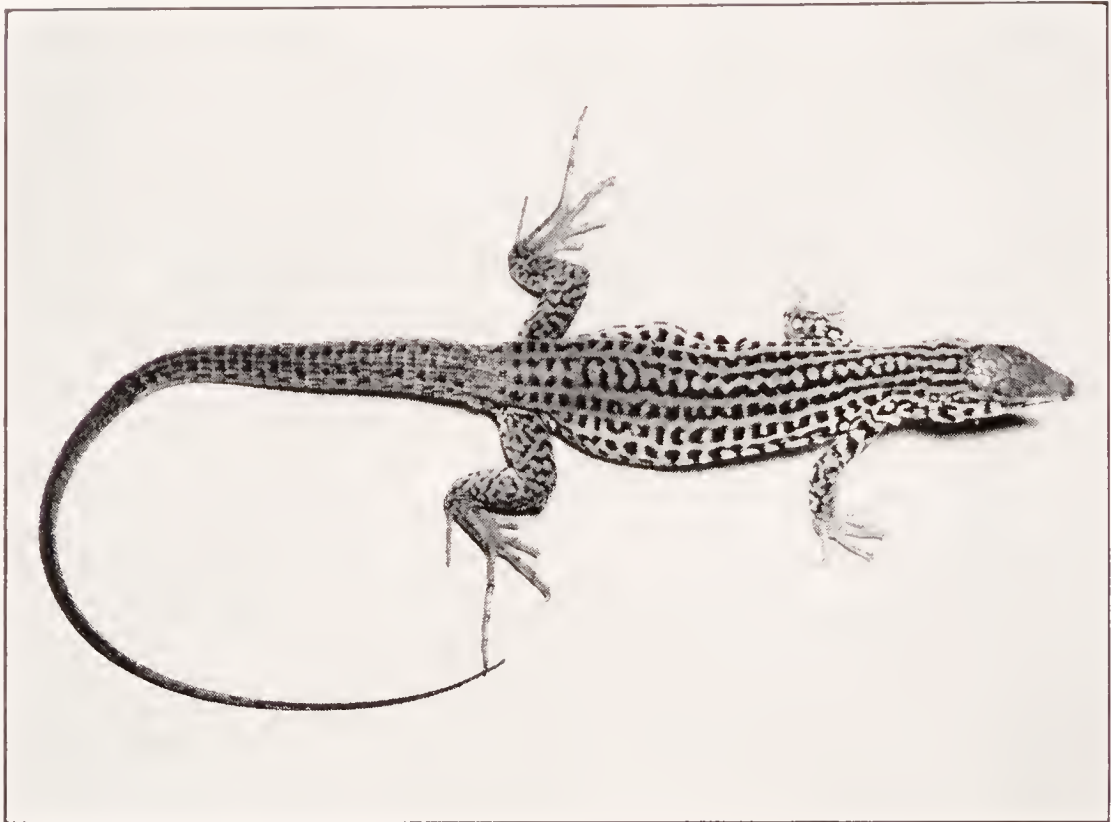
CALIFORNIA ORANGE-THROATED LIZARD
Cnemidophorus hyperythrus beldingi

This graceful and delicate-appearing lizard is found only on the coastal side of the mountains and does not range very far up into the higher mountain elevations. It appears to prefer areas of low scattered bushes and grass and seems to be particularly abundant in the heavy growths of Deerweed (*Hosackia glabra*) that so rapidly reoccupy many areas burned over by brush fires. This lizard is still fairly common in the heart of the City of San Diego in the uncultivated chaparral area of Powder House Canyon in Balboa Park. The Orange-throated Lizard is dark-brown or reddish-brown above and is longitudinally striped with narrow yellowish lines. There are two dull gray stripes down the middle of the back, these sometimes uniting into a single stripe that continues onto the tail. In adult males, the throat, abdomen, and inner sides of the legs and the underside of the tail are a more or less intense orange color. Adult females have a paler orange wash on the throat and belly, and juveniles are whitish below. The young also have bright blue tails, more especially on the latter half. This lizard has a narrow, pointed head and is long and whip-like in appearance, reaching a length of about nine inches. It is very nervous and alert and is usually quite difficult to approach closely, much less capture. Occasional specimens appear, however, to rely upon their immobility and protective coloration to escape detection and may be almost literally stepped upon before taking alarm. These lizards will take refuge in ground holes when they are too persistently pursued. The Orange-throat travels from bush to bush, poking its head this way and that as if engrossed in a continual but seemingly unsuccessful search. It forages for food by scratching in accumulations of leafy debris about the bases of bushes, and lives upon a diet of insects.



DESERT WHIPTAIL LIZARD
Cnemidophorus tigris tigris

In San Diego County the Desert Whiptail Lizard is found from the eastern base of the mountains eastward through the desert foothills into the desert proper. It is a rather long, slim species, adults reaching a length of about 12 inches, the tail occupying about two-thirds of the total length. These lizards are variable in their color pattern, these variations depending to a large extent upon the age of the lizard. The young may have 4 to 6 light yellowish or tan stripes running the length of the back and sides of the body, or these light stripes may be broken into longitudinally arranged series of light spots. The stripes overlies a dark-brown or blackish ground color that is broken up into dark squarish spots by light lines laterally connecting the longitudinal light stripes. Adults may or may not retain some indications of the more obvious striped appearance of the young. In the larger specimens the color pattern seems to be one of dark squarish spots on a light-gray to tan ground, the sides of the body being more or less conspicuously barred with tan or black. Also, the light areas of the forward part of the back are grayish in color while the rear portion is tan. The throat is gray, spotted with black. These lizards live in rocky or sandy situations and under the latter conditions are equally at home in either flats or dunes, such areas bearing numerous distinct furrows made by the lizard's tail as it is dragged over the sand surface. These are very nervous lizards normally moving with short, hesitant jerky motions. When pursued, they dash swiftly across open spaces usually stopping just short of a bush to crawl beneath it in a deliberate and seemingly contemptuous fashion. They live upon a diet of insects.



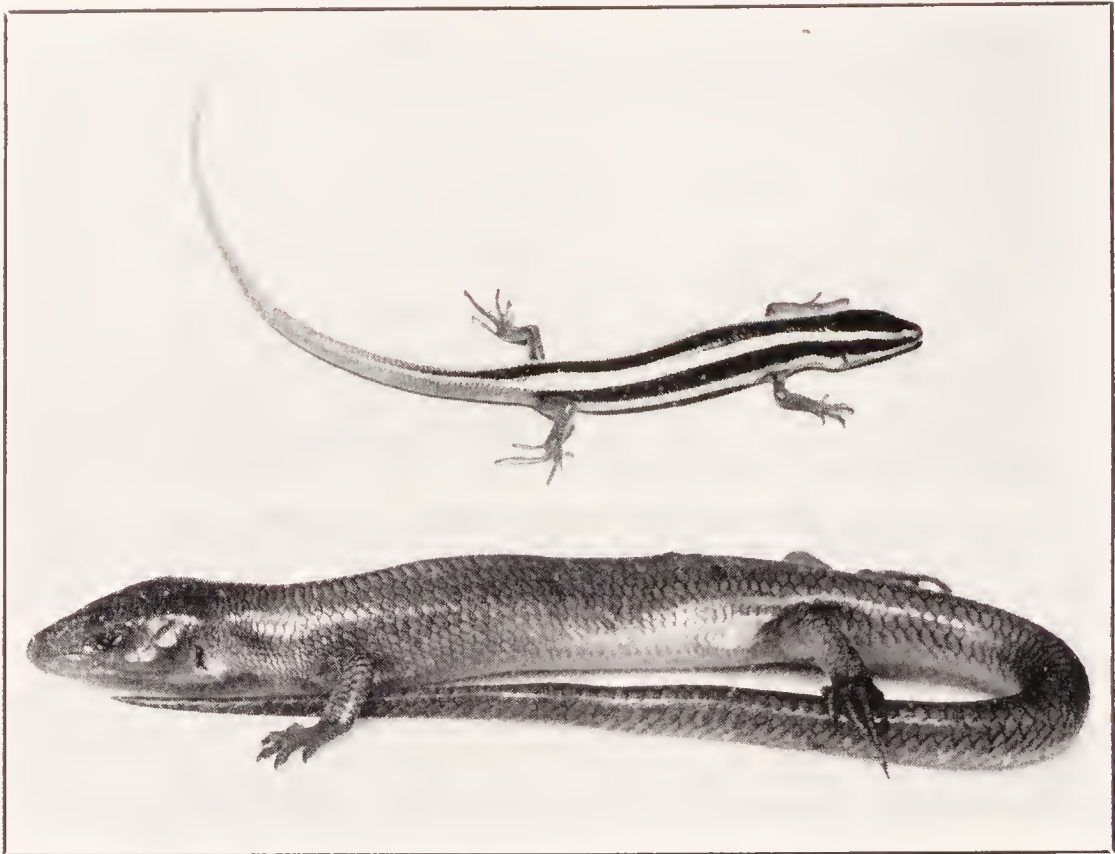
COASTAL WHIPTAIL LIZARD
Cnemidophorus tigris multiscutatus

This and the preceding subspecies are very similar in appearance, both having a long whip-like tail, narrow, pointed head and a similar color pattern. In coloration the Coastal Whiptail is the darker-appearing lizard, the colors being more intense with a greater contrast between the dark and light markings. A further difference between adult coastal and desert whiptail lizards exists in the coloration of the throat, this being grayish in the Desert Whiptail and orange in the Coastal Whiptail. This lizard attains a length of about 12 inches. It occurs on the coastal side of the mountains and on the eastern slopes of the mountains, but does not range into the desert. In the coastal foothills and inland valleys this lizard is moderately common in the comparatively more open chaparral areas. It is found well up into the mountains, at least to 5000 feet elevation. Like the Desert Whiptail, this is a nervous and agile lizard and when frightened runs with great speed, taking refuge in ground holes or beneath rocks. When the lizard is in a resting position, both the front and back legs may be slightly raised above and held parallel to the ground surface. This whiptail seems to be most commonly seen during the warmer summer months and is more active during the hotter, middle part of the day, when most other lizards have already sought cool retreats. The orange throat of the adult Coastal Whiptail is somewhat similar to that of the California Orange-throated Lizard. However, the two species are easily distinguished, the Orange-throat lacking black markings on the lower surfaces and never having a checkered pattern on the back. The Coastal Whiptail lives upon a diet of insects.



WESTERN SKINK
Eumeces skiltonianus

This and the next described species are known as skinks, a name derived from the Greek word *skinkos*, meaning "a kind of lizard." Both of our local skinks are characterized by relatively large, smooth, overlapping body scales that are rounded rather than pointed behind. The scalation has a polished, glossy appearance. The Western Skink occurs throughout the county from the coast eastward to the desert foothills. It is usually found in rather damp situations beneath some type of cover such as rocks, logs, and debris of various sorts. This lizard is also known as the Blue-tailed Skink, a name derived from the bright-blue tail of the young, these being easily distinguished from the pink-tailed juveniles of the Red-tailed Skink. The bright-blue tail color of the Western Skink fades with age, disappearing or dulling to a grayish-blue color confined to about the rear one-third or less of the tail. The pink on the tail of the Red-tailed Skink also disappears with age, giving way first to a yellowish-brown color and finally, when the lizard is fully grown, to a bronze color, this extending over the whole body as well. Adults of the Western Skink never lose all trace of the longitudinal light stripes on the back as does the Red-tailed Skink. Also, in adult Western Skinks the scales in the light area down the middle of the back do not have their rear borders edged with brown or black as do half-grown Red-tailed Skinks. Both Western and Red-tailed Skinks have short legs and when running, do so with a sort of undulatory motion suggestive of the crawling movements of snakes. These lizards live on a diet of insects and probably other arthropods as well. Adults of the Western Skink reach a length of about 6 inches.



RED-TAILED SKINK

Eumeces gilberti rubricaudatus

In this county the Red-tailed Skink is a moderately common species. It has not been taken within 15 miles of the coast, but is found from the coastal foothills eastward to the western edge of the desert foothills. It prefers rocky situations in association with chaparral, oaks, etc. The young, except for the coloration of the tail which, in this species, is pinkish, resemble the Western Skink. However, as the Red-tailed Skink ages, the pinkish tail color gradually gives way to a yellowish-brown and finally a bronze coloration. Also there is a gradual fading out of the distinctly striped body pattern of the young, the dark-brown or blackish color on the sides and top of the body becoming lighter due to a gradual disappearance of the dark color pigment, especially down the middle of the back. The light lines down either side of the body become grayish in medium sized specimens and disappear altogether in fully grown specimens. Half-grown individuals have a noticeable crossbarred effect due to the confinement of the dark color to the rear edge of the scales in the light area down the center of the back. This character will serve to distinguish medium sized specimens of the Red-tailed Skink from fully grown Western Skinks, these lacking the transverse barring on the middle of the back. Also, the Western Skink retains the light lines down either side of the back throughout life. Fully grown specimens of the Red-tailed Skink reach a length of about 12 inches. The adult males may have a more or less reddish head especially during the breeding season. If the specimen has recently shed its skin, this reddish coloration may be more brilliant, becoming duller as the lizard approaches its next shedding. These skinks live upon insects.

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